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ASSESSMENT OF HYDROGEOLOGIC
CONDITIONS AT THE COAL STORAGE
YARD AND VICTOR STREET TERMINAL,
MONSANTO COMPANY,
J.F. QUEENY PLANT,
ST. LOUIS, MISSOURI

November 1988

Geraghty & Miller, Inc.
Ground-Water Consultants
125 East Bethpage Road
Plainview, New York 11803



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EXECUTIVE SUMMARY

Geraghty & Miller, Inc. was retained by Monsanto Company in April 1988 to conduct an environmental assessment of the coal storage yard and the Victor Street Terminal, located south of the J.F. Queeny plant in St. Louis, Missouri, and to determine ground-water quality and hydrogeologic conditions on these sites. Geraghty & Miller directed the installation of several wells and borings on each property and collected soil and water samples to complete these objectives.

The geologic sequence of the study areas included up to 12 ft of fill material below land surface; this material consists chiefly of fine silty sand, cinders, rock fragments, and brick. The fill is underlain by a low-permeable, confining layer composed of silt and clay that varies from 16 to 27 ft thick. This layer rests on bedrock in the northern half of the coal storage yard. A permeable sand unit underlies the confining unit in the southern half of the coal storage yard and in the Victor Street Terminal. In these areas, the sand deposits overlie bedrock composed of limestone.

Ground-water flow patterns could not be defined in detail. The water table is perched above the low-permeable confining unit in the fill material below the Victor Street Terminal. At the coal storage yard, the water table is located at the bottom of the confining layer in the northern portion of the yard, and below it in the southern half of the site. However, based on these data and historical water-level information, ground water probably flows to the south or southeast in the coal storage yard and will eventually discharge into the Mississippi River. Due to perched conditions at the Victor Street Terminal, ground water should flow radially away from the site prior to discharging into the river.

Soil samples were analyzed in the field with a photoionization instrument to detect volatile organic compounds (VOCs). The results indicated that VOCs were present in the fill material at the Victor Street Terminal, and this was substantiated by water quality analyses. However, below the water table, the data may be indicative of ground-water quality rather than soil quality. Several soil samples were collected from above the perched water table, and within the diked area, at the Victor Street Terminal. These samples were composited and analyzed by Monsanto's in-house laboratory. The results indicate the presence of alkyl benzenes (4,300 parts per million [ppm] and chlorobenzene (93 ppm).

Ground-water samples were collected from wells at both sites and analyzed for priority pollutant compounds. The only organic compounds found at the coal storage yard were 1,2-trans-dichloroethylene at concentrations of 492 micrograms per liter (ug/L) and 848 ug/L and trichloroethylene (TCE) at levels ranging from 264 ug/L to 10,800 ug/L. The source of these compounds could not be determined. At the Victor Street Terminal, a number of VOCs and extractable compounds were found in the perched water table. However, only three of these compounds (benzene, chlorobenzene, and phenol) were detected above 100 ug/L, at concentrations ranging from 1,580 ug/L to 18,600 ug/L. Several priority pollutant metals were also detected at both sites; however, they were found at low concentrations.

INTRODUCTION

In April 1988, Geraghty & Miller, Inc. was retained by Monsanto Company to conduct an environmental assessment of two parcels of land, located adjacent to the southern portion of the J.F. Queeny plant in St. Louis, Missouri. The objective of this study was to determine ground-water quality and local hydrogeologic conditions at the coal storage yard and at the Victor Street Terminal (Figure 1).

To accomplish this task, Geraghty & Miller conducted a field investigation to describe geologic conditions and to collect soil- and ground-water quality data. During the study, five monitoring wells were installed and 12 borings were drilled. In addition, water-level elevations were measured in each new well to determine ground-water flow directions. Soil samples were analyzed in the field for the presence of VOCs, and water samples were submitted for laboratory analysis of the United States Environmental Protection Agency (USEPA) list of priority pollutant compounds.

Drilling and sampling protocols are summarized in Appendix A, with geologic logs and well construction diagrams provided in Appendices B and C, respectively. Raw laboratory data and water sampling logs are included in Appendices D and E, respectively.

BACKGROUND

Coal Storage Yard

The coal storage yard is approximately 800 ft long (north to south), 220 ft wide at its northern end, and about 75 ft wide at its southern boundary. Prior to its acquisition by Monsanto Company in 1983, the 2.7-acre site was owned by C. Hager and Sons Hinge Manufacturing Company. A candle and soap factory, and later the hinge factory, occupied the northern quarter of the site. However, for at least 10 years prior to its acquisition by Monsanto, the property had been used, at times, for coal storage. Under Monsanto Company's ownership, the site has been used solely to stockpile and store coal.

Victor Street Terminal

The Victor Street Terminal site is approximately 285 ft long (north to south) and 300 ft wide (east to west); it is also owned by Monsanto Company. This 1.9-acre parcel has served as a fuel and chemical storage facility for at least 20 years. In addition to the company's own use of the Victor Street Terminal, Monsanto has leased the storage facility to others. Four aboveground tanks are located at this site, and each has a storage capacity of about 250,000 gallons. Materials that have been stored at the Victor Street Terminal by Monsanto and others, according to Monsanto's records, are petroleum products, alkyl benzenes, blends of alkyl benzenes (Purex A-220 and Canadian A-221),

Santicizer 154 plasticizer (p-t-butylphenyl diphenyl phosphate), monochlorobenzene, ortho-nitrochlorobenzene, sodium hydroxide, and potassium hydroxide.

METHODOLOGY

Monitoring Well/Soil Boring Locations

From May 23 to June 1, 1988, Geraghty & Miller, directed the installation of three monitoring wells and two soil borings at the coal storage yard, and two monitoring wells and nine soil borings at the Victor Street Terminal (Figure 1). These locations were selected to provide the hydrogeologic and chemical data necessary to permit an assessment of both sites. Construction details for each monitoring well are provided in Table 1.

Three wells were located in the coal storage yard to provide data for the northern, central, and southern portion of the site. As the depth to bedrock varies considerably in the vicinity of the J.F. Queeny plant, the borings were drilled to bedrock to determine its depth prior to the installation of each well. Three soil borings were also completed on the property to provide a spatial distribution of the drilling locations and to aid in the assessment of hydrogeologic conditions.

At the Victor Street Terminal, two monitoring wells were installed at the downgradient or eastern side of the facility to determine if this facility has impacted ground-

water quality. These wells were installed at shallow depths in fill material to characterize local ground-water quality in a perched water table. Prior to the installation of Well VW-1, the borehole was drilled to bedrock to determine its depth, but drilling to bedrock was not necessary at Well VW-2 because it is located near Well VW-1.

Nine soil borings were drilled into the upper portion of the water table at locations around the four aboveground storage tanks (Figure 1). These sites were selected within the earthen confining dikes to determine if any leakage or spillage had occurred in the past.

Soil-Quality Sampling

Soil samples were collected at each drilling location for geologic description and for volatile organic compound (VOC) analysis in the field by means of a photoionization detection instrument. In addition, selected soil samples were collected within the diked area at the Victor Street Terminal for analysis by Monsanto's in-house laboratory.

Water-Quality Sampling

Between May 31 and June 1, 1988, Geraghty & Miller obtained samples from monitoring wells at the coal storage yard and the Victor Street Terminal. Ground-water samples were collected for analysis of the USEPA priority pollutant list of compounds, which includes VOCs, acid extractable organics, base/neutral extractable organics, pesticides,

polychlorinated biphenyls (PCBs), phenols, total cyanides, and metals.

Field measurements were made of pH, specific conductance, and temperature and were recorded on-site during sampling. A field blank, a blind sample replicate, and a trip blank were collected for quality assurance/quality control (QA/QC) protocols. The field blank was collected to determine the effectiveness of the decontamination protocols used by Geraghty & Miller. The sample replicate was collected to determine the laboratory's ability to reproduce chemical analysis results for two samples from one well. The trip blank was analyzed to determine if samples had become contaminated during shipment. All samples were stored and shipped overnight to Environmental Testing Corporation (ETC), Edison, New Jersey, in pre-cooled sample shuttles with the appropriate chain-of-custody forms.

Water-Level Measurements

Water-levels were measured on May 31, 1988, with a calibrated steel tape and chalk. The elevations of the measuring point for each monitoring well were surveyed by Kenneth Balk & Associates, Inc., St. Louis, Missouri. The purpose of water-level measurements was to determine the elevation of ground water at each location so that the direction and horizontal gradient of ground-water flow could be established.

HYDROGEOLOGY

Geology

The coal storage yard and Victor Street Terminal are underlain by fill and alluvial flood-plain deposits from the Mississippi River. These deposits overlies dense massive beds of limestone.

In the study areas, the fill and flood plain deposits varied in thickness from 16 ft at the northwestern end of the coal storage yard to 81 ft below land surface at the southeastern end of the coal storage yard (Well HW-1), as shown on Figure 2. The fill material varies from 4 to 12 ft below land surface and consists chiefly of fine silty sand, cinders, rock fragments, and brick. Beneath the fill material lies 16 to 27 ft of silt and clay with a sand lens detected at the southern end of the site. The silt and clay unit overlies bedrock in the northern half of the site. The silt and clay represent a low-permeable confining layer that is underlain by predominantly fine sand, which overlies the limestone bedrock.

At the Victor Street Terminal, the same geologic sequence occurs as shown on the geologic cross section presented on Figure 3. The fill is composed of material similar to that found at the coal storage yard at a thickness of 14 ft below land surface. The silt and clay layer underlying the fill was found to be 15 ft thick. The silt and clay overlies sand which, in turn, overlies the limestone bedrock

encountered at 71 ft below grade. The sand beneath this site appeared to be coarser than the sand found beneath the coal yard.

Ground-Water Flow

As this investigation was limited to the coal storage yard and the Victor Street Terminal, a synoptic round of water-level measurements was not made to describe ground-water flow conditions in the plant area. A detailed map of the ground-water flow conditions in the study area could not be prepared as only two wells tap the water table on each property. However, plant-wide synoptic measurements have been made many times in the past, and with water-level data from the study area, probable ground-water flow directions can be determined. To demonstrate the elevation and general direction of ground-water flow in the study area, an illustration (drawn in 1987) of the water-table configuration in the plant area is provided on Figure 4.

The elevation of the water table near the plant's southern boundary at Wells MW-11B and MW-15 was 415.25 and 418.33 ft above mean sea level (msl), respectively, on September 23, 1987. As shown on Figure 4, the water table decreases quickly in elevation to the north, south, and east, resulting in a steep hydraulic gradient. Therefore, the elevation of the water table and its gradient, shown on Figure 2 (cross section of the coal storage yard), agrees with last year's data. The water table is located at the

bottom of the confining layer in the northern portion of the coal yard, and below it in the southern half of the site. Based on these data and historical water-level information, ground water probably flows to the south or southeast through the coal storage yard and will eventually discharge into the Mississippi River because the river is a discharge boundary. Water-level data, measured on May 31, 1988, are presented in Table 2.

Although sediments were wet at the bottom of the silt and clay layer at Well HW-3, ground water did not enter the well. This indicates that the water table is within the bedrock at this location; however, it may be above the bedrock at other times of the year.

The east-west cross section through the coal storage yard and the Victor Street Terminal is provided on Figure 3. The elevation of the water table varies considerably between each site. Although a water-table elevation of 410 ft above msl at the Victor Street Terminal does not appear unusually high, based on the elevation of the plant-wide water table for this area (Figure 4), we believe ground-water conditions are perched in the fill above the silt and clay. The silt and clay beneath the coal storage yard was moist in places; however, the fill above it was dry. It is possible that the permeability of the clay at the coal storage yard is higher

than that found at the Victor Street Terminal; a higher permeability would permit water to pass through the confining layer more easily.

A perched water table should cause ground water to flow radially away from the site. Although the water-level data for this site are inconclusive with respect to flow direction when compared to water-level data obtained from the coal storage yard, ground water will eventually discharge into the Mississippi River, which is a discharge boundary.

SOIL QUALITY

Coal Storage Yard

Soil samples were collected from each well and soil boring location for VOC analysis in the field (headspace analysis) with a photoionization detection instrument. The results are summarized in Table 3. No VOCs were detected at concentrations above 1 part per million (ppm) in the shallow fill material (as measured and calibrated to isobutylene). VOCs were detected at concentrations ranging from 1.1 to 7.3 ppm in seven of the 32 samples collected from the silt and clay zone. Beneath this zone, VOCs were detected in the sand formation at concentrations less than 4 ppm, with the exception of one sample from location HW-2 at 29 to 31 ft below land surface (13.8 ppm).

The photoionization instrument provides qualitative data only, and the readings cannot be considered reliable

when compared to a VOC analysis performed by gas chromatography in a laboratory. In addition, the instrument cannot distinguish between natural or man-made VOC compounds.

Victor Street Terminal

Soil samples were also collected from each well and boring at the Victor Street Terminal location for VOC analysis with the photoionization detector. The results, provided in Table 3, were higher than those measured in the coal storage yard. VOC concentrations were much higher in the fill material, with odors and some staining observed. These data were substantiated by water-quality analyses from Wells VW-1 and VW-2. At Well VW-1, the VOC concentrations in the fill and in the silty clay zone below it were similar; however, the field readings decreased significantly with depth until bedrock was encountered. The quality of this zone (beneath the silty clay layer) cannot be conclusively determined without laboratory analyses.

Detectable VOC concentrations were also found in Borings VB-1 through VB-9, the soil borings drilled adjacent to the tank farm within the diked area. With the exception of Boring VB-9, detectable levels were only found in samples within the saturated zone. Therefore, these data may be indicative of VOCs in ground water, rather than VOCs in the unsaturated soil above the water table.

The soil samples with the highest VOC results, as determined in the field, were submitted to Monsanto personnel

for laboratory analysis. These samples were VB-1 (4 to 6 ft), VB-2 (6 to 8 ft), and VB-9 (2 to 4 ft and 4 to 6 ft). These samples were composited in the laboratory and the results are presented in Table 4. The results indicate the presence of alkyl benzenes (4,300 ppm) and chlorobenzene (93 ppm). These compounds are most likely related to chemical handling operations at the terminal.

WATER QUALITY

Coal Storage Yard

Ground-water samples were collected by Geraghty & Miller personnel from Wells HW-1 and HW-2 on May 31, 1988. Each sample was analyzed for USEPA priority pollutant compounds by ETC, Edison, New Jersey. At the time of sampling, ground water had not migrated into Well HW-3; therefore, it could not be sampled. Water sampling protocols are presented in Appendix A. Analytical results are summarized in Tables 4 through 8, and copies of the original laboratory reports and water sampling logs are presented in Appendices D and E, respectively.

Two VOCs (trans-1,2-dichloroethylene and trichloroethylene [TCE]) were detected in Wells HW-1 and HW-2; however, the results were higher in Well HW-2 (Table 4). Trans-1,2-Dichloroethylene was detected at 492 ug/L and 848 ug/L, and TCE was found at 264 ug/L and 10,800 ug/L. None of the remainder of the priority pollutant list of organic compounds was detected in these wells. Several priority pollutant

metals were also detected (nickel, selenium, and zinc); however, they were found at low concentrations.

Victor Street Terminal

Ground-water samples were also collected from Wells VW-1 and VW-2 on May 31, 1988, and these samples were analyzed for the same suite of parameters. The results are presented in Tables 4 through 8.

A replicate sample was collected from Well VW-2 to determine the accuracy of the laboratory's results. This sample is identified as Well VW-2R in Table 4. However, the replicate sample was diluted by laboratory personnel prior to analysis, which indicates that, from their initial screening, they believed contamination to be present; however, the original sample was not diluted. This dilution is indicated by the higher detection limits for the replicate sample (VW-2R). Benzene and methylene chloride were found in the replicate sample at concentrations of 4,490 ug/L and 292 ug/L, respectively, and these compounds were not detected in the original sample. As a result of this discrepancy, the original sample (VW-2) and its replicate (VW-2R) were both reanalyzed for VOCs and identified as VW-2* and VW-2R*, respectively, as shown in Table 4. The results of the reanalysis confirmed the presence of chlorobenzene and methylene chloride in both samples from this well. In addition, these two compounds and benzene were also detected in Well VW-1.

Due to the high concentrations of benzene and chlorobenzene found in these wells, we believe that both of these compounds are present. As these two wells are located adjacent to the eastern boundary of the terminal and they were installed in a perched water table, the source of the compounds is probably related to chemical handling operations at the site.

Methylene chloride was reported to be present in Wells VW-1 and VW-2; however, it may be a laboratory artifact and, therefore, would not be present in the ground water. This compound is often present in analytical results, and, if the sample is diluted prior to analysis, the concentration level of the methylene chloride is multiplied by the dilution factor. Therefore, it is not surprising for laboratory personnel to report this compound at levels approaching 1,000 ug/L.

A number of acid and base/neutral extractable compounds were detected below 100 ug/L in Well VW-1, including 2-chlorophenol, acenaphthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. However, phenol was detected at 1,580 ug/L and cyanide was found at 0.2 mg/L (Tables 5, 6, and 8). Neither pesticides nor PCBs were found in either Well VW-1 or VW-2 (Table 7).

Chromium, copper, lead, nickel, and zinc were detected in Well VW-1 and zinc was also found in Well VW-2; however,

each of these priority pollutant metals was detected at low concentrations.

FINDINGS AND CONCLUSIONS

1. The fill material underlying the coal storage yard and the Victor Street Terminal varies from 4 to 12 ft below land surface and consists predominantly of fine silty sand, cinders, rock fragments, and brick. A low-permeable confining layer composed of silt and clay underlies the fill and varies from 16 to 27 ft below land surface. The confining layer rests directly on bedrock in the northern half of the coal storage yard. A more permeable sand unit underlies the silt and clay in the remainder of the coal storage yard and in the Victor Street Terminal. This sand unit overlies the limestone bedrock. The bedrock surface is very irregular, as it varies between 16 ft and 81 ft below land surface at the coal yard, and it was found at a depth of 71 ft at the Victor Street Terminal.
2. The water table at the Victor Street Terminal is within the fill material perched above the silt and confining clay unit. At the coal storage yard, the water table is located near the base of the silt/clay layer and is beneath this layer at the southern end of the yard.
3. A detailed map of ground-water flow conditions could not be prepared for these sites as only two wells tap

the water table on each property and both wells at the Victor Street Terminal encountered a perched water table. However, based on these data and historical water-level information, ground water probably flows south to southeast in the coal storage yard and will eventually discharge into the Mississippi River. Due to perched conditions at the Victor Street Terminal, ground water most likely flows radially away from the terminal prior to discharging to the river.

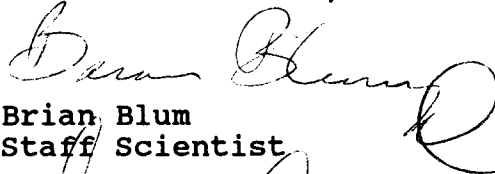
4. Soil samples were collected within the diked area (above the perched water table) at the Victor Street Terminal. Four of these samples were composited and analyzed by Monsanto's in-house laboratory. The results indicate the presence of alkyl benzenes (4,300 ppm) and chlorobenzene (93 ppm). These compounds are most likely related to chemical handling operations at the site. Headspace analyses for VOCs were also performed on all soil samples in the field with a photoionization detector. The highest readings were obtained in the fill material at the Victor Street Terminal and these data were substantiated by water-quality analyses for Wells VW-1 and VW-2.
5. Only two VOCs, trans-1,2-dichloroethylene and TCE, were detected in the ground-water samples collected at the coal storage yard, and both compounds were reported to be higher in Well HW-2. Trans-1,2-Dichloroethylene

was detected at 492 ug/L and 848 ug/L and TCE was found at 264 ug/L and 10,800 ug/L. Nickel, selenium, and zinc were also detected; however, each metal was found at low concentrations.

6. At the Victor Street Terminal, a number of VOCs and extractable compounds were found in the perched water table. Benzene, chlorobenzene, and phenol were the only organic compounds detected above 100 ug/L. Benzene was detected at 3,220 ug/L; chlorobenzene ranged from 4,490 to 18,600 ug/L; and phenol was found at 1,580 ug/L. Other compounds found at levels less than 100 ug/L are 2-chlorophenol, acenaphthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. Several priority pollutant metals were also detected, (chromium, copper, lead, nickel, and zinc); however, each metal was found at low concentrations.

Respectfully submitted,

GERAGHTY & MILLER, INC.


Brian Blum
Staff Scientist


Dennis Colton
Principal Scientist

BB:DC:sm
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Table 1. Summary of Construction Details for Monitoring Wells, Monsanto Chemical Company, J.F. Queeny Plant, St. Louis, Missouri.

Well	Date Completed	Well Diameter (inches)	Depth (feet below land surface)	Screen Setting (feet below land surface)	Interval Gravel Packed (feet below land surface)	Interval Sealed with Bentonite (feet below land surface)	Interval Sealed with Grout (feet below land surface)	Height of Measuring Point (feet with respect to land surface)	Elevation of Measuring Point (feet above mean sea level)
<u>Coal Storage Yard</u>									
HW-1	5/25/88	2	45	30 - 45	25 - 45	23 - 25	0 - 23	2.0	423.15
HW-2	5/25/88	2	29	14 - 29	9 - 14	7 - 9	0 - 7	2.0	425.28
HW-3	5/26/88	2	22	7 - 22	5 - 22	4 - 5	0 - 4	2.0	423.99
<u>Victor Street Terminal</u>									
VW-1	5/24/88	2	14	4 - 14	3 - 14	2 - 3	0 - 2	2.0	419.19
VW-2	5/24/88	2	14	4 - 14	3 - 14	2 - 3	0 - 2	2.0	419.42

Table 2. Summary of Static Water-Level Elevations on May 31, 1988, Monsanto Company, J.F. Queeny Plant, St. Louis, Missouri.

Well	Elevation of the Measuring Point (feet above mean sea level)	Depth to Water (feet below mean sea level)	Elevation of the Water Level (feet above mean sea level)
<u>Coal Storage Yard</u>			
HW-1	423.15	38.03	385.12
HW-2	425.28	28.90	396.38
HW-3	423.99	Dry	-
<u>Victor Street Terminal</u>			
VW-1	419.19	8.80	410.39
VW-2	419.42	9.41	410.01

Table 3. Field Measurements of Volatile Organic Compounds in Soil, Monsanto Company, J.F. Queeny Plant, St. Louis, Missouri (concentrations in parts per million).

Sample Interval	<u>Coal Storage Yard</u>						<u>Victor Street Terminal</u>											
	<u>Wells</u>			<u>Borings</u>			<u>Wells</u>						<u>Borings</u>					
	HW-1	HW-2	HW-3	HB-1	HB-2	HB-3	VW-1	VW-2	VB-1	VB-2	VB-3	VB-4	VB-5	VB-6	VB-7	VB-8	VB-9	
0 - 2	-	-	-	-	-	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5.7
2 - 4	BDL	BDL	BDL	BDL	BDL	BDL	122	4.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	>100
4 - 6	BDL	BDL	BDL	BDL	BDL	BDL	26.6	20.3	382	1.2	20.7	1.2	BDL	1.1	BDL	1.3	220	
6 - 8	BDL	BDL	BDL	BDL	BDL	BDL	36.4	11.3	-	83.3	-	-	-	-	-	-	-	
8 - 10	BDL	BDL	BDL	BDL	BDL	1.1	372	116.0	-	-	-	-	-	-	-	-	-	
10 - 12	BDL	3.8	-	BDL	BDL	-	217	307	-	-	-	-	-	-	-	-	-	
12 - 14	BDL	-	-	BDL	-	-	13.7	53.2	-	-	-	-	-	-	-	-	-	
14 - 16	BDL	6.5	BDL	BDL	BDL	BDL	130.2	42.2	-	-	-	-	-	-	-	-	-	
16 - 18	BDL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
18 - 20	BDL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
19 - 21	-	3.2	1.7	BDL	4.2	-	342	-	-	-	-	-	-	-	-	-	-	
20 - 22	BDL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22 - 24	BDL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24 - 26	-	7.3	-	BDL	BDL	-	99.9	-	-	-	-	-	-	-	-	-	-	
29 - 31	BDL	13.8	-	BDL	-	-	28.7	-	-	-	-	-	-	-	-	-	-	
34 - 36	3.8	-	-	3.9	-	-	19.7	-	-	-	-	-	-	-	-	-	-	
39 - 41	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
44 - 46	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
49 - 51	2.3	-	-	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	

- Sample not collected.

BDL Below 1 part per million as measured and calibrated to isobutylene.

Table 3. Field Measurements of Volatile Organic Compounds in Soil, Monsanto Company, J.F. Queeny Plant, St. Louis, Missouri (concentrations in parts per million).

Sample Interval	<u>Coal Storage Yard</u>						<u>Victor Street Terminal</u>											
	<u>Wells</u>			<u>Borings</u>			<u>Wells</u>						<u>Borings</u>					
	HW-1	HW-2	HW-3	HB-1	HB-2	HB-3	VW-1	VW-2	VB-1	VB-2	VB-3	VB-4	VB-5	VB-6	VB-7	VB-8	VB-9	
54 - 56	1.7	-	-	-	-	-	2.1	-	-	-	-	-	-	-	-	-	-	
59 - 61	1.2	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	-	
64 - 66	BDL	-	-	-	-	-	1.4	-	-	-	-	-	-	-	-	-	-	
69 - 71	BDL	-	-	-	-	-	BDL	-	-	-	-	-	-	-	-	-	-	

- Sample not collected.

BDL Below 1 part per million as measured and calibrated to isobutylene.

Table 4. Summary of Soil-Quality Data for the Victor Street Terminal, J.F. Queeny Plant, St. Louis, Missouri.

Parameter	Results (ppm) ^a
Family of Alkyl Benzenes	4,300
Chlorobenzene	93
o-Nitrochlorobenzene	<10
Santicizer 154 (p-t-butylphenyl diphenyl phosphate)	<10
Soil pH	6.5 - 7.0

^a This soil sample was composited from samples collected at Borings VB-1 (4 to 6 ft), VB-2 (6 to 8 ft), and VB-9 (2 to 4 ft and 4 to 6 ft). Results are reported in parts per million.

Table 5. Summary of Volatile Organic Compounds in Ground Water, Monsanto Company,
J.F. Queeny Plant, St. Louis, Missouri.

Well:	VW-1	VW-2	VW-2*	VW-2R	VW-2R*	HW-1	HW-2
Date:	5/88	5/88	5/88	5/88	5/88	5/88	5/88
USEPA Priority Pollutant							
Volatile Organic Compounds							
(concentrations in ug/L)							
Acrolein	<10,000	<100	<10,000	<10,000	<10,000	<100	<100
Acrylonitrile	<10,000	<100	<10,000	<10,000	<10,000	<100	<100
Benzene	3,220	<4.4	<440	<440	<440	<4.4	<4.4
bis(Chloromethyl)ether	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
Bromoform	<470	<4.7	<470	<470	<470	<4.7	<4.7
Carbon tetrachloride	<280	<2.8	<280	<280	<280	<2.8	<2.8
Chlorobenzene	18,600	<6.0	5,780	4,490	7,840	<6.0	<6.0
Chlorodibromomethane	<310	<3.1	<310	<310	<310	<3.1	<3.1
Chloroethane	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
2-Chloroethylvinyl ether	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
Chloroform	<160	<1.6	<160	<160	<160	<1.6	<1.6
Dichlorobromomethane	<220	<2.2	<220	<220	<220	<2.2	<2.2
Dichlorodifluoromethane	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
1,1-Dichloroethane	<470	<4.7	<470	<470	<470	<4.7	<4.7
1,2-Dichloroethane	<280	<2.8	<280	<280	<280	<2.8	<2.8
1,1-Dichloroethylene	<280	<2.8	<280	<280	<280	<2.8	<2.8
1,2-Dichloropropane	<600	<6.0	<600	<600	<600	<6.0	<6.0
cis-1,3-Dichloropropylene	<500	<5.0	<500	<500	<500	<5.0	<5.0
trans-1,3-Dichloropropylene	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
Ethylbenzene	<720	<7.2	<720	<720	<720	<7.2	<7.2
Methyl bromide	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
Methyl chloride	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
Methylene chloride	307	<2.8	711	292	729	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<690	<6.9	<690	<690	<690	<6.9	<6.9
Tetrachloroethylene	<410	<4.1	<410	<410	<410	<4.1	<4.1
Toluene	<600	<6.0	<600	<600	<600	<6.0	<6.0
trans-1,2-Dichloroethylene	<160	2.1	<160	<160	<160	492	848
1,1,1-Trichloroethane	<380	<3.8	<380	<380	<380	<3.8	<3.8
1,1,2-Trichloroethane	<500	<5.0	<500	<500	<500	<5.0	<5.0
Trichloroethylene	<190	<1.9	<190	<190	<190	264	10,800
Trichlorofluoromethane	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
Vinyl chloride	<1,000	<10	<1,000	<1,000	<1,000	<10	<10
Total VOCs analyzed	22,127	2.1	6,491	4,782	8,569	756	11,648

ug/L Micrograms per liter.

VW-2R Replicate sample of Well VW-2.

* Reanalysis of original sample.

Table 5. Summary of Volatile Organic Compounds in Ground Water, Monsanto Company,
J.F. Queeny Plant, St. Louis, Missouri.

	Field	Trip
Well:	Blank	Blank
Date:	5/88	5/88
USEPA Priority Pollutant		
Volatile Organic Compounds		
(concentrations in ug/L)		
Acrolein	<100	<100
Acrylonitrile	<100	<100
Benzene	<4.4	<4.4
bis(Chloromethyl)ether	<10	<10
Bromoform	<4.7	<4.7
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	<6.0	<6.0
Chlorodibromomethane	<3.1	<3.1
Chloroethane	<10	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Dichlorobromomethane	<2.2	<2.2
Dichlorodifluoromethane	<10	<10
1,1-Dichloroethane	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8
1,1-Dichloroethylene	<2.8	<2.8
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropylene	<5.0	<5.0
trans-1,3-Dichloropropylene	<10	<10
Ethylbenzene	<7.2	<7.2
Methyl bromide	<10	<10
Methyl chloride	<10	<10
Methylene chloride	11.6	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	<6.0	<6.0
trans-1,2-Dichloroethylene	<1.6	<1.6
1,1,1-Trichloroethane	<3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	<1.9	<1.9
Trichlorofluoromethane	<10	<10
Vinyl chloride	<10	<10
Total VOCs analyzed	11.6	0

ug/L Micrograms per liter.

VW-2R Replicate sample of Well VW-2.

* Reanalysis of original sample.

Table 6. Summary of Acid Extractable Compounds in Ground Water, Monsanto Company,
J.F. Queeny Plant, St. Louis, Missouri.

Well:	VW-1	VW-2	VW-2R	HW-1	HW-2
Date:	5/88	5/88	5/88	5/88	5/88
USEPA Priority Pollutant					
Acid Extractable					
Organic Compounds					
(concentrations in ug/L)					
2-Chlorophenol	53.5	12.5	14.8	<3.7	<3.5
2,4-Dichlorophenol	<2.8	<2.8	<3.0	<3.0	<2.8
2,4-Dimethylphenol	<2.8	<2.8	<3.0	<3.0	<2.8
4,6-Dinitro-o-cresol	<25	<25	<26	<27	<25
2,4-Dinitrophenol	<44	<44	<46	<47	<44
2-Nitrophenol	<3.8	<3.8	<4.0	<4.0	<3.8
4-Nitrophenol	<2.5	<2.5	<2.6	<2.7	<2.5
p-Chloro-m-cresol	<3.2	<3.2	<3.3	<3.3	<3.2
Pentachlorophenol	<3.8	<3.8	<4.0	<4.0	<3.8
Phenol	1,580	3.4	4.0	<1.7	<1.6
2,4,6-Trichlorophenol	<2.8	<2.8	<3.0	<3.0	<2.8
Total acid compounds analyzed	1,633.5	15.9	18.8	0	0

ug/L Micrograms per liter.

VW-2R Replicate sample of Well VW-2.

Table 7. Summary of Base/Neutral Extractable Organic Compounds in Ground Water, Monsanto Company, J.F. Queeny Plant, St. Louis, Missouri.

Well:	VW-1	VW-2	VW-2R	HW-1	HW-2
Date:	5/88	5/88	5/88	5/88	5/88
USEPA Priority Pollutant					
Base/Neutral Extractable					
Organic Compounds					
(concentrations in ug/L)					
Acenaphthene	3.1	<2.0	<2.1	<2.1	<2.0
Acenaphthylene	<3.7	<3.7	<3.8	<3.9	<3.7
Anthracene	<2.0	<2.0	<2.1	<2.1	<2.0
Benzidine	<46	<46	<48	<49	<46
Benzo(a)anthracene	<8.2	<8.2	<8.6	<8.7	<8.2
Benzo(a)pyrene	<2.6	<2.6	<2.7	<2.8	<2.6
Benzo(b)fluoranthene	<5.1	<5.1	<5.3	<5.3	<5.1
Benzo(ghi)perylene	<4.3	<4.3	<4.5	<4.6	<4.3
Benzo(k)fluoranthene	<2.6	<2.6	<2.7	<2.8	<2.6
bis(2-Chloroethoxy)methane	<5.6	<5.6	<5.8	<5.9	<5.6
bis(2-Chloroethyl)ether	<6.0	<6.0	<6.3	<6.3	<6.0
bis(2-Chloroisopropyl)ether	<6.0	<6.0	<6.3	<6.3	<6.0
bis(2-Ethylhexyl)phthalate	<11	<11	<11	<11	<11
4-Bromophenyl phenyl ether	<2.0	<2.0	<2.1	<2.1	<2.0
Butyl benzyl phthalate	<11	<11	<11	<11	<11
2-Chloronaphthalene	<2.0	<2.0	<2.1	<2.1	<2.0
4-Chlorophenyl phenyl ether	<4.4	<4.4	<4.6	<4.7	<4.4
Chrysene	2.9	<2.6	<2.7	<2.8	<2.6
Dibenzo(a,h)anthracene	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<2.0	<2.0	<2.1	<2.1	<2.0
1,3-Dichlorobenzene	<2.0	<2.0	<2.1	<2.1	<2.0
1,4-Dichlorobenzene	<4.6	<4.6	<4.8	<4.9	<4.6
3,3'-Dichlorobenzidine	<17	<17	<18	<18	<17
Diethyl phthalate	<11	<11	<11	<11	<11
Dimethyl phthalate	<11	<11	<11	<11	<11
Di-n-butyl phthalate	<11	<11	<11	<11	<11
2,4-Dinitrotoluene	<6.0	<6.0	<6.3	<6.3	<6.0
2,6-Dinitrotoluene	<2.0	<2.0	<2.1	<2.1	<2.0
Di-n-octyl phthalate	<11	<11	<11	<11	<11
1,2-Diphenylhydrazine	<11	<11	<11	<11	<11
Fluoranthene	6.4	<2.3	<2.4	<2.4	<2.3
Fluorene	4.0	<2.0	<2.1	<2.1	<2.0
Hexachlorobenzene	<2.0	<2.0	<2.1	<2.1	<2.0
Hexachlorobutadiene	<1.0	<1.0	<1.0	<1.0	<1.0
Hexachlorocyclopentadiene	<11	<11	<11	<11	<11
Hexachloroethane	<1.7	<1.7	<1.8	<1.8	<1.7
Indeno(1,2,3-c,d)pyrene	<4.9	<4.9	<5.2	<5.2	<4.9
Isophorone	<2.3	<2.3	<2.4	<2.4	<2.3
Naphthalene	64.2	49.4	38.1	<1.8	<1.7
Nitrobenzene	<2.0	<2.0	<2.1	<2.1	<2.0
n-Nitrosodimethylamine	<11	<11	<11	<11	<11
n-Nitrosodi-n-propylamine	<11	<11	<11	<11	<11
n-Nitrosodiphenylamine	<2.0	<2.0	<2.1	<2.1	<2.0
Phenanthrene	7.9	<5.7	<5.9	<6.0	<5.7
Pyrene	5.7	<2.0	<2.1	<2.1	<2.0
1,2,4-Trichlorobenzene	<2.0	<2.0	<2.1	<2.1	<2.0
Total base/neutral compounds analyzed	94.2	49.4	38.1	0	0

ug/L Micrograms per liter.

VW-2R Replicate sample of well VW-2.

Table 8. Summary of Pesticide/PCB Compounds in Ground Water, Monsanto Company,
J.F. Queeny Plant, St. Louis, Missouri.

	Well:	VW-1	VW-2	VW-2R	HW-1	HW-2
	Date:	5/88	5/88	5/88	5/88	5/88
USEPA Priority Pollutant						
Pesticide/PCB Compounds						
(concentrations in ug/L)						
Aldrin		<2.0	<2.0	<2.1	<2.1	<2.0
Alpha-BHC		<11	<11	<11	<11	<11
Beta-BHC		<4.4	<4.4	<4.6	<4.7	<4.4
Gamma-BHC		<11	<11	<11	<11	<11
Delta-BHC		<3.3	<3.3	<3.4	<3.4	<3.3
Chlordane		<11	<11	<11	<11	<11
4,4'-DDT		<2.9	<2.9	<3.1	<3.1	<2.9
4,4'-DDE		<5.9	<5.9	<6.2	<6.2	<5.9
4,4'-DDD		<4.9	<4.9	<5.2	<5.2	<4.9
Dieldrin		<2.6	<2.6	<2.7	<2.8	<2.6
Endosulfan I		<11	<11	<11	<11	<11
Endosulfan II		<11	<11	<11	<11	<11
Endosulfan sulfate		<5.9	<5.9	<6.2	<6.2	<5.9
Endrin		<11	<11	<11	<11	<11
Endrin aldehyde		<11	<11	<11	<11	<11
Heptachlor		<2.0	<2.0	<2.1	<2.1	<2.0
Heptachlor epoxide		<2.3	<2.3	<2.4	<2.4	<2.3
PCB-1016		<38	<38	<40	<40	<38
PCB-1221		<38	<38	<40	<40	<38
PCB-1232		<38	<38	<40	<40	<38
PCB-1242		<38	<38	<40	<40	<38
PCB-1248		<38	<38	<40	<40	<38
PCB-1254		<38	<38	<40	<40	<38
PCB-1260		<38	<38	<40	<40	<38
Toxaphene		<11	<11	<11	<11	<11
Total pesticide/PCB compounds analyzed		0	0	0	0	0

ug/L Micrograms per liter

VW-2R Replicate sample of Well VW-2.

Table 9. Summary of Metals and Miscellaneous Parameters in Ground Water, Monsanto Company,
J.F. Queeny Plant, St. Louis, Missouri.

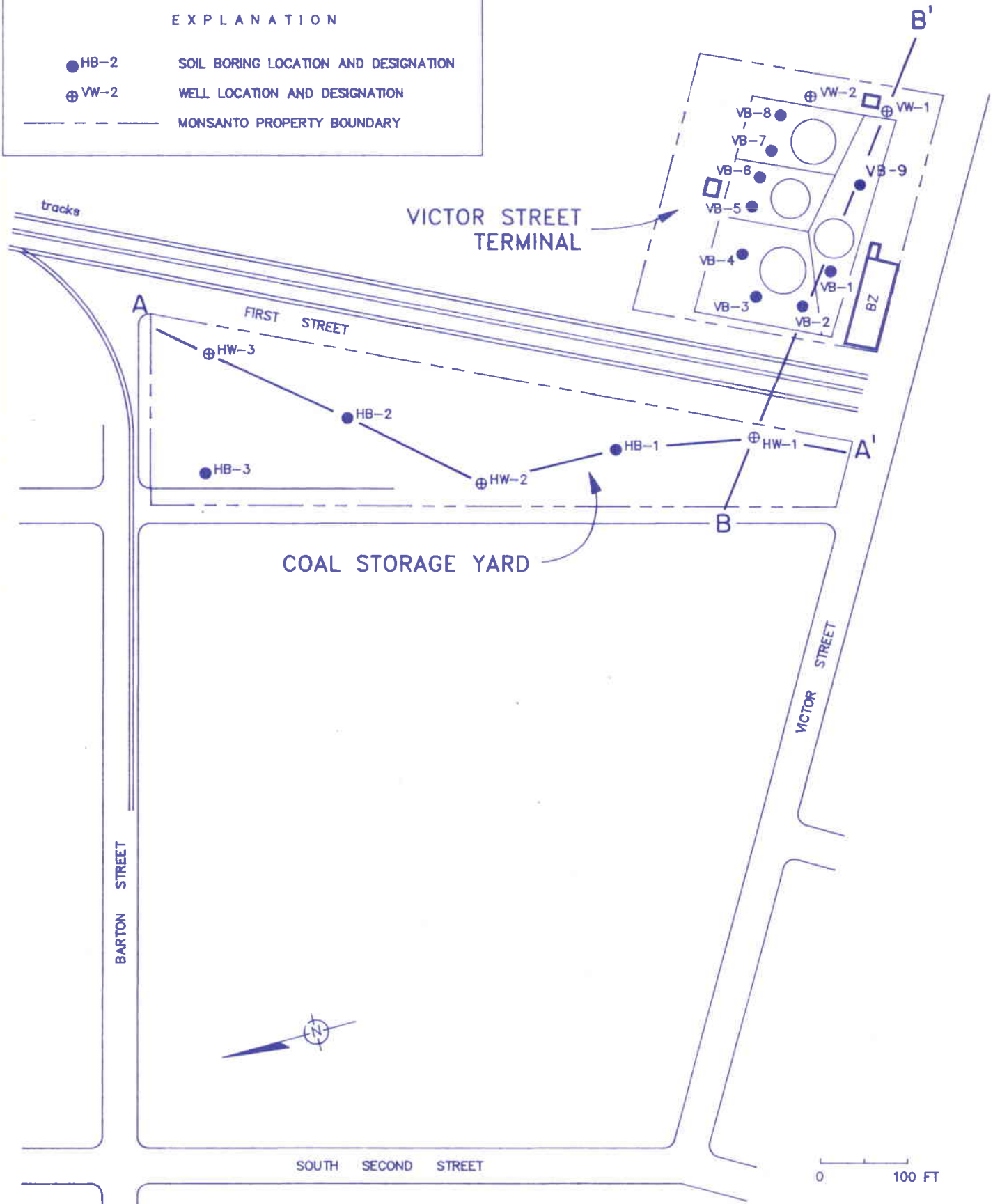
Well:	VW-1	VW-2	VW-2R	HW-1	HW-2
Date:	5/88	5/88	5/88	5/88	5/88
USEPA Priority Pollutant					
Metals (concentrations in mg/L, except where noted)					
Antimony	<0.087	<0.077	<0.077	<0.077	<0.077
Arsenic	<0.050	<0.01	<0.01	<0.01	<0.01
Beryllium	<0.00077	<0.00054	<0.00054	<0.00054	<0.00054
Cadmium	<0.0023	<0.0046	<0.0046	<0.0046	<0.0046
Chromium	0.032	<0.026	<0.026	<0.026	<0.026
Copper	0.042	<0.013	<0.013	<0.013	<0.013
Lead	0.10	<0.051	<0.051	<0.051	<0.051
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nickel	0.025	<0.018	<0.018	<0.018	0.027
Selenium	<0.005	<0.005	<0.005	<0.005	0.0059
Silver	<0.005	<0.018	<0.018	<0.018	<0.018
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	0.230	0.039	0.072	0.068	0.043
Miscellaneous Parameters					
pH (units)	9.30	7.12	7.12	6.45	6.85
Spec. conductance (umhos/cm)	2,750	2,390	2,390	1,680	1,650
Temperature (degrees/centigrade)	17.0	15.0	15.0	17.0	18.0
Cyanide	0.2	<0.025	<0.025	<0.025	0.061
Phenols	3.4	0.13	0.11	<0.05	<0.05

mg/L Milligrams per liter.

VW-2R Replicate sample of Well VW-2.

EXPLANATION

- HB-2 SOIL BORING LOCATION AND DESIGNATION
- ⊕ VW-2 WELL LOCATION AND DESIGNATION
- MONSANTO PROPERTY BOUNDARY



SUBJECT:

LOCATION OF WELLS, BORINGS, AND LINES OF CROSS SECTION
IN THE STUDY AREA

FIGURE

1



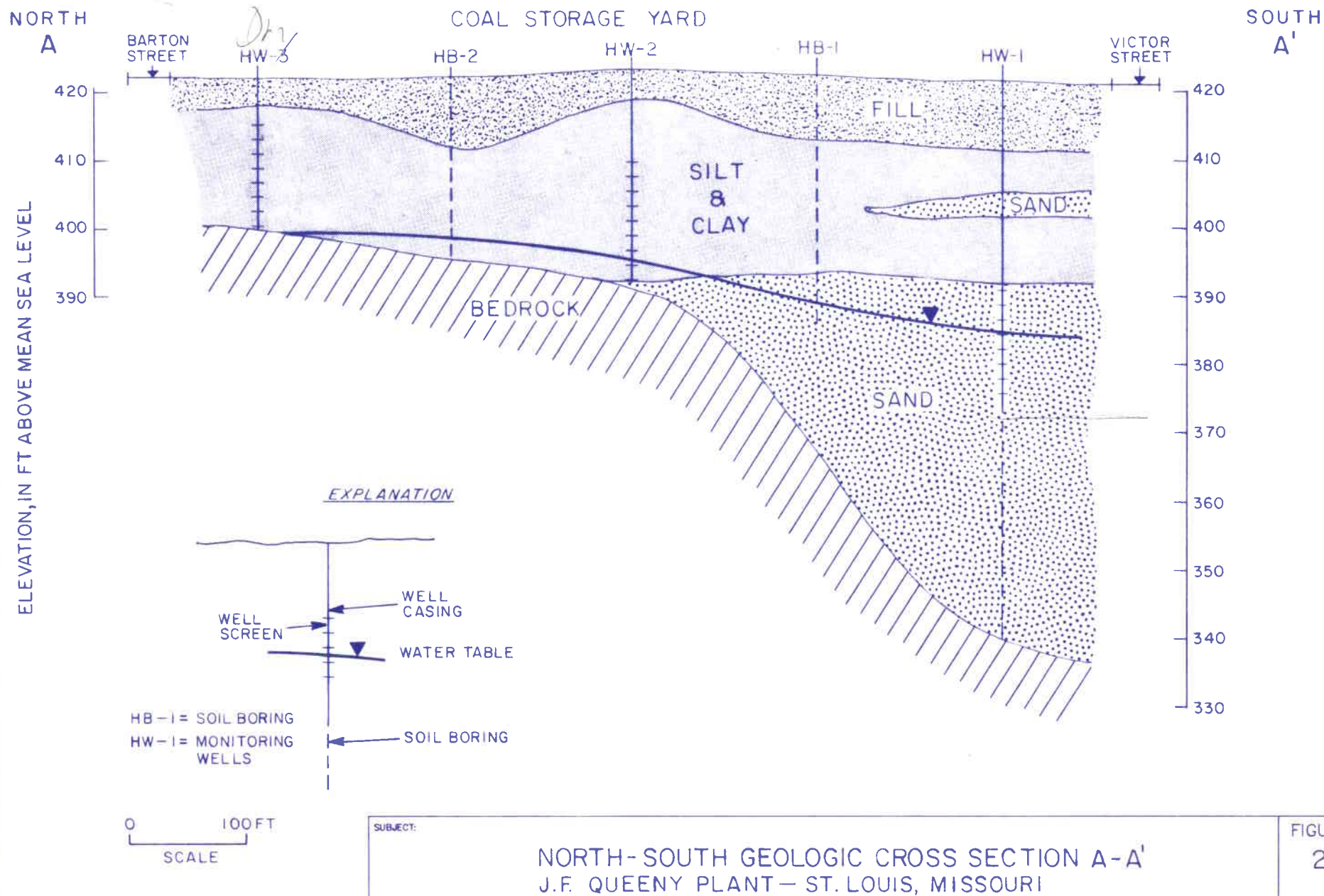
GERAGHTY
& MILLER, INC.
Ground-Water Consultants

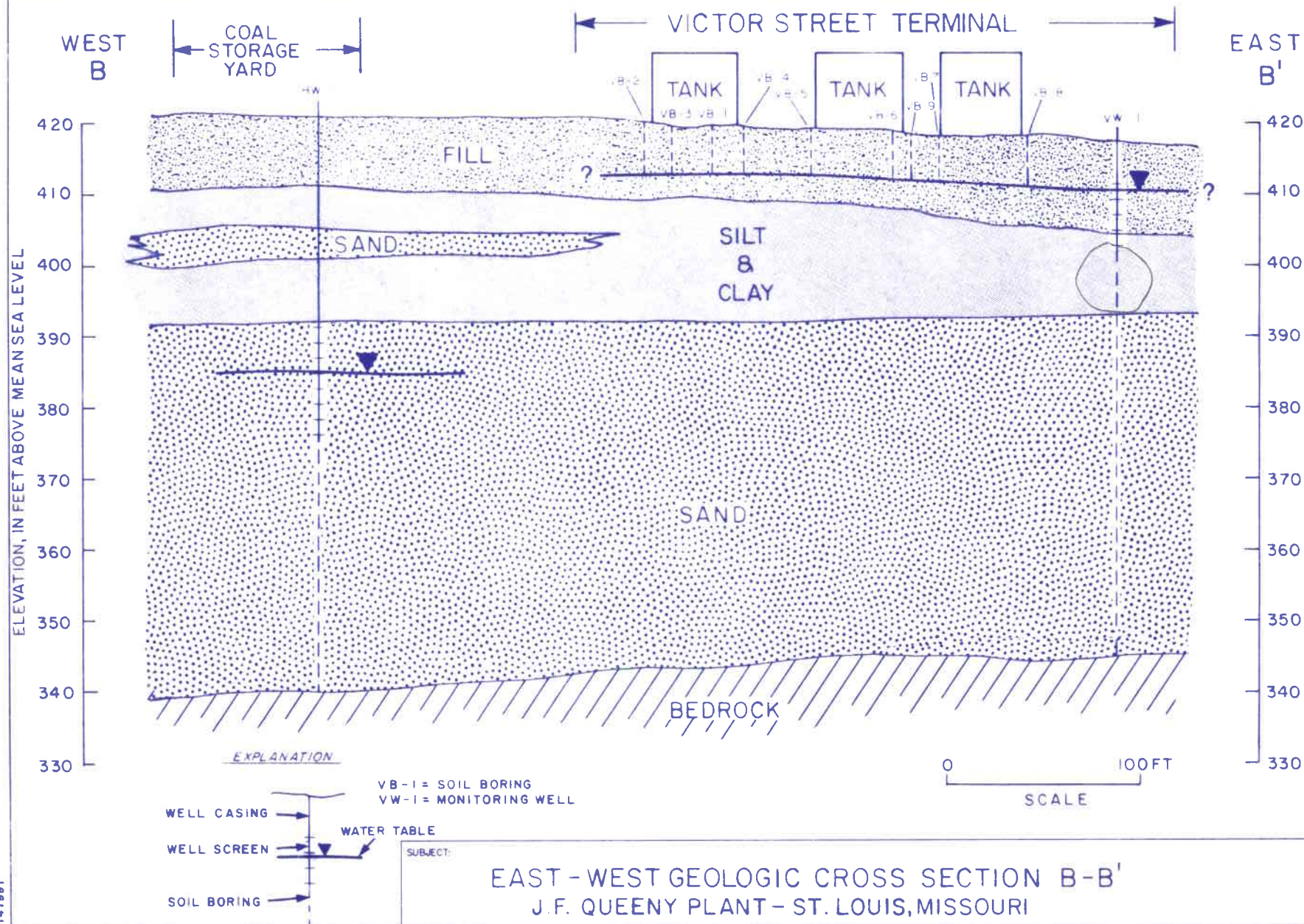
COMPILED
BY: DENNIS COLTON
PREPARED
BY: ELAINE DeLUCA
PROJECT
MGR.: DENNIS COLTON

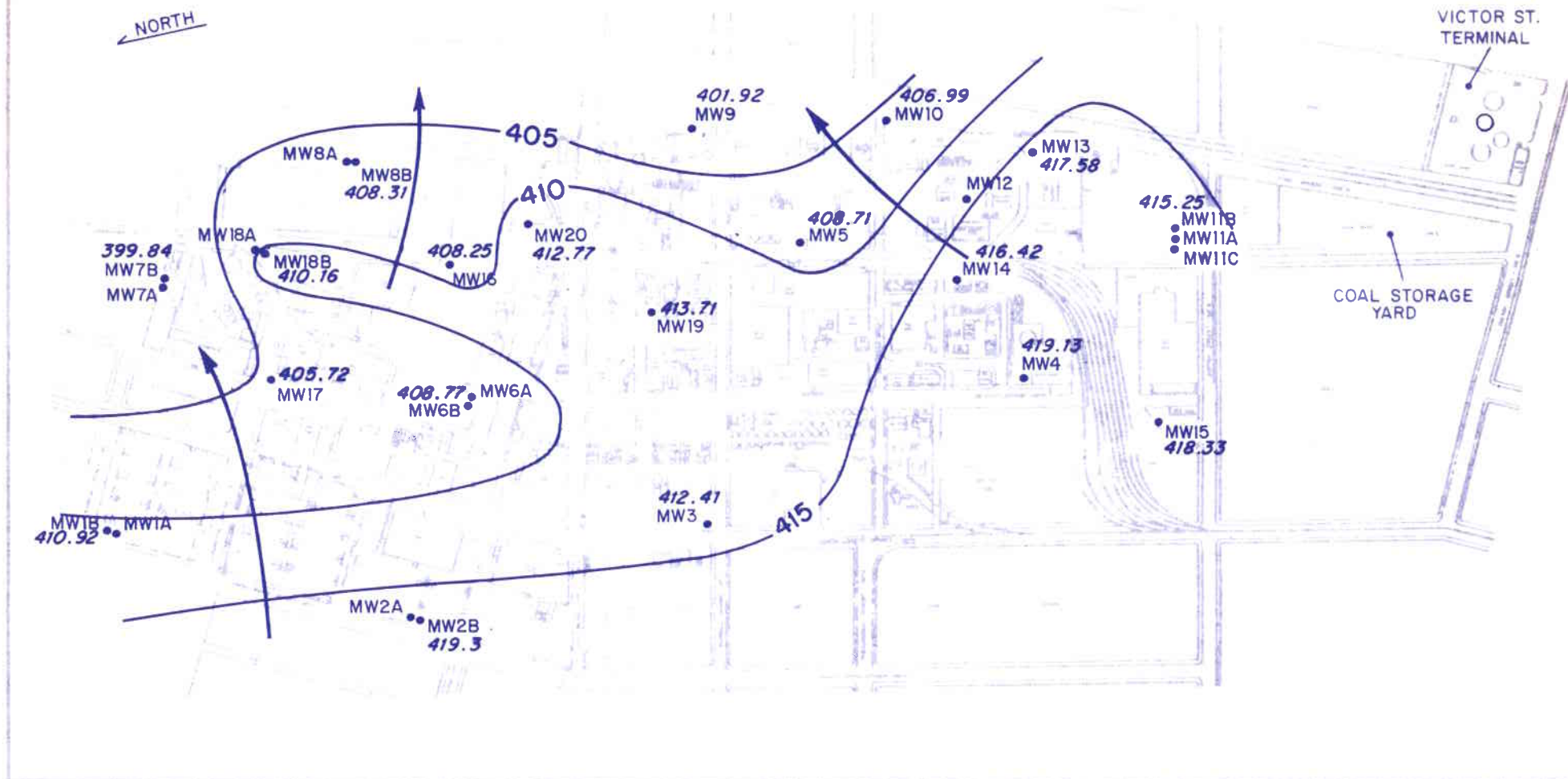
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9/88
SCALE:
SHOWN
FILE NO:
NY308QU4-1114

PREPARED
FOR:

MONSANTO COMPANY
J.F. QUEENY PLANT - ST. LOUIS







EXPLANATION

CONFIGURATION OF THE WATER TABLE SEPTEMBER 23, 1987

MONSANTO CHEMICAL COMPANY

J.F. QUEENY PLANT
St. Louis, Missouri

FIGURE 4

APPENDIX A

DRILLING AND SAMPLING PROTOCOLS

Soil Boring/Well Installation

From May 23 to June 1, 1988, 12 soil borings and five monitoring wells were installed by John Mathes & Associates, Inc., Columbia, Illinois under the direction of a Geraghty & Miller hydrogeologist. As a result of high VOC readings from soil at the Victor Street Terminal, drilling was performed with Level C protection at this site. Level D protection requirements were followed at the coal storage yard.

The monitoring wells were installed in a manner which maintains the integrity of the borehole while preventing the intrusion of potential contaminants from surface runoff down the annular space between the well casing/screen and borehole wall. The boreholes were advanced using truck-mounted, hollow-stem power-auger equipment (8-in. outside diameter and 4-in. inside diameter). Selected wells were drilled to bedrock to provide a geologic description of the entire depth of the unconsolidated deposits. The remainder of the wells and each boring were drilled into the upper portion of the water table. Split-spoon (core) soil samples were collected at 2-ft intervals above the water table and at 5-ft intervals below the water table, and were retained for geologic interpretation by the on-site hydrogeologist. Geologic logs are presented in Appendix B.

Once the borehole had been advanced to the appropriate depth, the well casing and screen were installed through the hollow-auger flights. Screen lengths of 10 or 15 ft were selected and positioned to allow a portion of the screen to extend above the water-table surface. The casings and screens utilized were 2-in. inside diameter, schedule 40, internally threaded PVC. Glue or solvents, which can leach contaminants into the ground water long after the well has been installed, were not used to join the casing and screen lengths. Clean, graded sand was emplaced through the auger flights into the annular space surrounding the well screen and brought to approximately 2- to 5-ft above the top of the screen. The augers were removed at 5-ft intervals as the sand was being placed to ensure that the annular space around the well screen was filled. A 1- to 2-ft thick bentonite (pellet) seal was placed above the sand pack, and the remainder of the annular space was filled with cement/bentonite grout. A tremie pipe was used to place the cement/bentonite seal in the annular space around the deeper wells in the coal storage yard to ensure that the seal was placed at the proper depth. A protective steel casing and locking cap was installed over the well casing at land surface and set in a cement surface seal. Depths and construction details for all wells are summarized in Table 1, and well construction logs are provided in Appendix C.

After the wells had been installed, they were developed using an air compressor to ensure a good hydraulic connec-

tion between the well screen and the aquifer. At well locations VW-1 and VW-2, the development water was containerized as a result of the odors that were encountered during drilling.

Soil Sample Collection

Soil samples were collected with a split-spoon core sampler at each drilling location and were transferred to the custody of Monsanto personnel. Continuous split-spoon samples were collected at 2-ft intervals above the water table and at 5-ft increments below the water table, and were placed in glass jars. Each sample was described for its location, depth, grain size, color, moisture content, and odors or staining (if present). All sampling equipment was thoroughly washed with a phosphate-free detergent solution and rinsed with potable water between each use.

Water Sample Collection

Three equivalent casing volumes of water were removed from each monitoring well with a Teflon™ bailer prior to sample collection. Each well was sampled with a Teflon™ bailer, which was cleaned with laboratory-grade detergent, and rinsed with distilled water after the sampling of each well. Clean sample bottles, which were supplied by the laboratory, were used. The bottles were stored in pre-cooled (blue-ice) sampling shuttles after sample collection. All samples were stored and preserved in accordance with instructions provided by ETC. Samples were delivered to the

laboratory within 24 hours of collection via Federal Express, following standard chain-of-custody protocols. Pertinent information about each sample collected, including temperature, pH, and specific conductance, was recorded on water sampling logs (Appendix E).

Quality Assurance/Quality Control

As part of Geraghty & Miller's quality assurance/quality control (QA/QC) program, all down-hole drilling tools (augers, drilling rods, and split-spoon core barrels) were steam cleaned before the first well was installed, between well installations, and at the completion of the project, to prevent cross contamination. In addition, the split-spoon core barrels were washed with a laboratory-grade detergent and rinsed with potable water between samples in each borehole. Also, the well screen and casing were steam cleaned immediately before installation.

Other QA/QC procedures included the collection and VOC analysis of a trip blank, a field blank, and one blind replicate sample. The trip blank results were used to determine if the ground-water samples had been contaminated during shipment; field blank results were used to verify the quality of Geraghty & Miller's decontamination protocols; and blind replicate results were used to check on the analytical accuracy of the contracted laboratory.

SAMPLE/CORE LOG

BORING/WELL: HW-1 PROJECT NO: Monsanto Queeny NY0308QU04 PAGE: 1 of 2
 SITE LOCATION: St. Louis, MO DRILLING STARTED: 5/24/88 DRILLING COMPLETED: 5/25/88
 TOTAL DEPTH DRILLED: 79 feet HOLE DIAMETER: 6 inches TYPE OF SAMPLE/CORING DEVICE: Split-Barrel Core
 LENGTH & DIAMETER OF CORING DEVICE: 2 feet/ 1 1/2 inches SAMPLING INTERVAL: continuous/5 feet
 LAND-SURFACE ELEVATION: () SURVEYED
() ESTIMATED DATUM: _____
 DRILLING FLUID USED: None DRILLING METHOD: Hollow-Stem Auger (CME-75)
 DRILLING CONTRACTOR: John Mathes & Associates, Inc. DRILLER: C. Whistle HELPER: C. Harriss
 PREPARED BY: B. Blum HAMMER WEIGHT: 140 lbs. HAMMER DROP: 30 inches

SAMPLE DEPTH (FT BELOW LAND SURFACE)		CORE RECVRY (FT)	BLOW COUNTS PER 6 INCHES	SAMPLE/CORE DESCRIPTION
FROM	TO			
0	2		Grab	Coal (graded on to surface).
2	4	1.0	5-5-4-4	Fill: sand very fine and silt with cinder and coal dust black with rust staining.
4	6	1.5	1-2-2-4	Fill: silty black, with slight red to purple color (possibly coal dust).
6	8	2.0	2-3-4-5	Fill: coal dust grading into olive green silt like material. A piece of brick was lodged into core barrel shoe.
8	10	1.5	4-4-3-4	Fill: silt-like material (unknown source) with chunks of brick.
10	12	2.0	2-2-3-4	Silt and clay, olive gray with rust inclusions.
12	14	2.0	2-3-2-1	Same as above with less clay; wet at 13 feet.
14	16	2.0	2-1-2-2	Silt and clay, wet, grading into very fine sand, olive gray and dry at 15.75 feet.
16	18	2.0	3-4-3-3	Sand, very fine with silt, olive gray, moist in core barrel shoe.
18	20	2.0	3-3-4-3	Sand, very fine with silt, olive gray.
20	22	2.0	2-2-3-3	Silt and clay, olive gray; moist.
22	24	2.0	2-2-1-2	Silt, olive gray, wet.
5/25/88				
29	31	2.0	5-6-4-5	Sand, fine to medium, well sorted, brown, dry.
32	34	2.0	4-5-5-7	Sand, very fine, brown, moist.
34	36	2.0	4-6-7-8	Same as above, wet.

PAGE: 2 of 2

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

BORING/WELL: VW-1 PROJECT NO: Monsanto Queeny NY0308QU04 PAGE: 1 of 2
 SITE LOCATION: St. Louis, MO DRILLING STARTED: 5/23/88 DRILLING COMPLETED: 5/24/88
 TOTAL DEPTH DRILLED: 70.75 ft HOLE DIAMETER: 6 inches TYPE OF SAMPLE/CORING DEVICE: Split-Barrel Core
 LENGTH & DIAMETER OF CORING DEVICE: 2 feet/ 1 1/2 inches SAMPLING INTERVAL: continuous/5 feet
 LAND-SURFACE ELEVATION: () SURVEYED
() ESTIMATED DATUM: _____
 DRILLING FLUID USED: None DRILLING METHOD: Hollow-Stem Auger (CME-75)
 DRILLING CONTRACTOR: John Mathes & Associates, Inc. DRILLER: C. Whistle HELPER: C. Harriss
 PREPARED BY: B. Blum HAMMER WEIGHT: 140 lbs. HAMMER DROP: 30 inches

SAMPLE DEPTH (FT BELOW LAND SURFACE)		CORE RECVRY (FT)	BLOW COUNTS PER 6 INCHES	SAMPLE/CORE DESCRIPTION
FROM	TO			
0	2		Grab	Fill: mixture of sand, silt and gravel below a crushed stone cover.
2	4	1.5	2-1-1-1	Fill: cinder, black with sand, fine with silt and 25-30% gravel stained brown to black (possibly petroleum hydrocarbon?) loose.
4	6	1.5	2-1-1-1	Same as above.
6	8	1.0	1-0-0-1	Same as above - wet at 6.5 feet.
8	10	0.75	1-1-1-1	Same as above.
10	12	1.0	2-1-5-2	Fill: cinder grading into silt and clay. Piece of rock was lodged in core barrel shoe.
12	14		2-1	Silt and clay, gray.
14	16	2.0	1-1-1-2	Silt, gray grading into clay, gray at 15 feet.
19	21	2.0	5-7-5-5	Silt grading into fine sand lens well sorted (0.5 feet) grading to fine sand and silt mixture.
24	26	2.0	2-1-2-1	Silt, clay, and sand, very fine, olive gray.
29	31	2.0	6-16-13-18	Sand, coarse, gray and assorted grain colors with 0.2 feet silt seam in shoe of spoon.
34	36	2.0	4-6-5-13	Sand, medium to coarse with some silt (5%).
39	41	---	5-9-10-15	No recovery (remnant sand, coarse).
44	46	---	5-7-11-13	No recovery - probably fine sands.

PAGE: 2 of 2

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

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SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

SAMPLE/CORE LOG

[illegible]

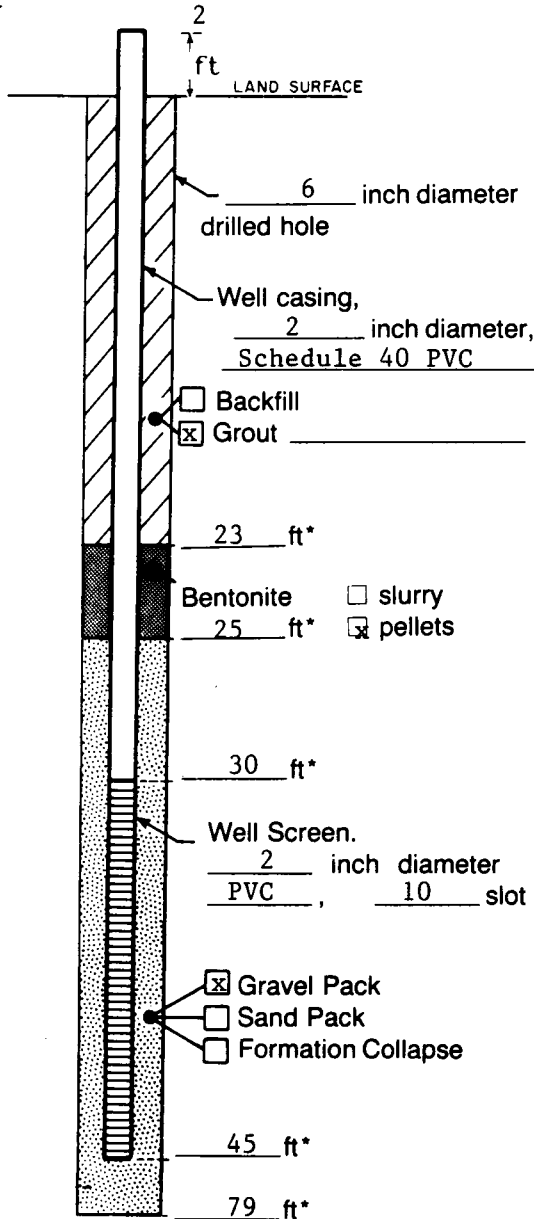
SAMPLE/CORE LOG

[illegible]

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)

4 inch diameter
protective steel
casing with
lock



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project Monsanto Queeny/NY0308QU03 Well HW-1

Town/City St. Louis

County St. Louis State Missouri

Permit No. _____

Land-Surface Elevation

and Datum 421.15 feet ☒ Surveyed

MSL ☐ Estimated

Installation Date(s) 5/25/88

Drilling Method Hollow Stem Auger (CME-75)

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Surging with compressed air on 5/27/88

Fluid Loss During Drilling Approximately 35 gallons

Water Removed During Development 60 gallons

Static Depth to Water 36.33 on 5/26/88 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 2 1/2 hours

Yield 1/2 gpm Date _____

Specific Capacity _____ gpm/ft

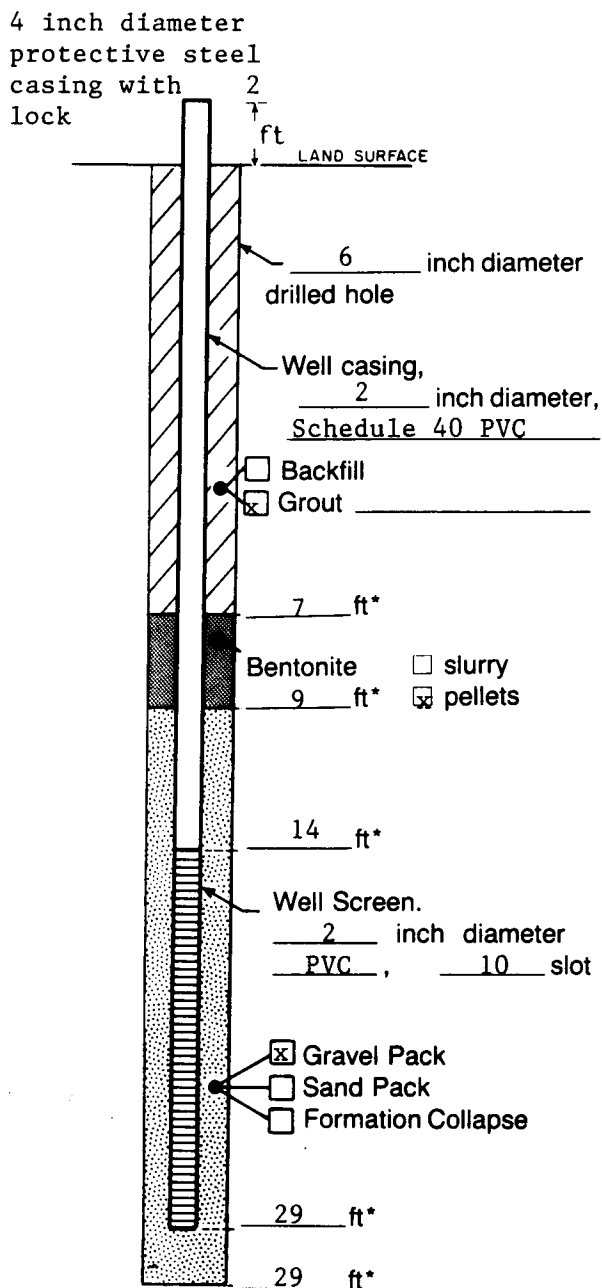
Well Purpose Ground Water Monitoring

Remarks _____

Prepared by B. Blum

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project Monsanto Queeny/NY0308QU04 Well HW-2

Town/City St. Louis

County St. Louis State Missouri

Permit No. _____

Land-Surface Elevation

and Datum 423.28 feet

☒ Surveyed

MSL

☐ Estimated

Installation Date(s) 5/25/88

Drilling Method Hollow Stem Auger (CME-75)

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Surging with compressed air on 5/27/88

Fluid Loss During Drilling None gallons

Water Removed During Development 30 gallons

Static Depth to Water 28.40 on 5/26/88 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 2 hours

Yield 1/4 gpm

Date _____

Specific Capacity _____ gpm/ft

Well Purpose Ground Water Monitoring

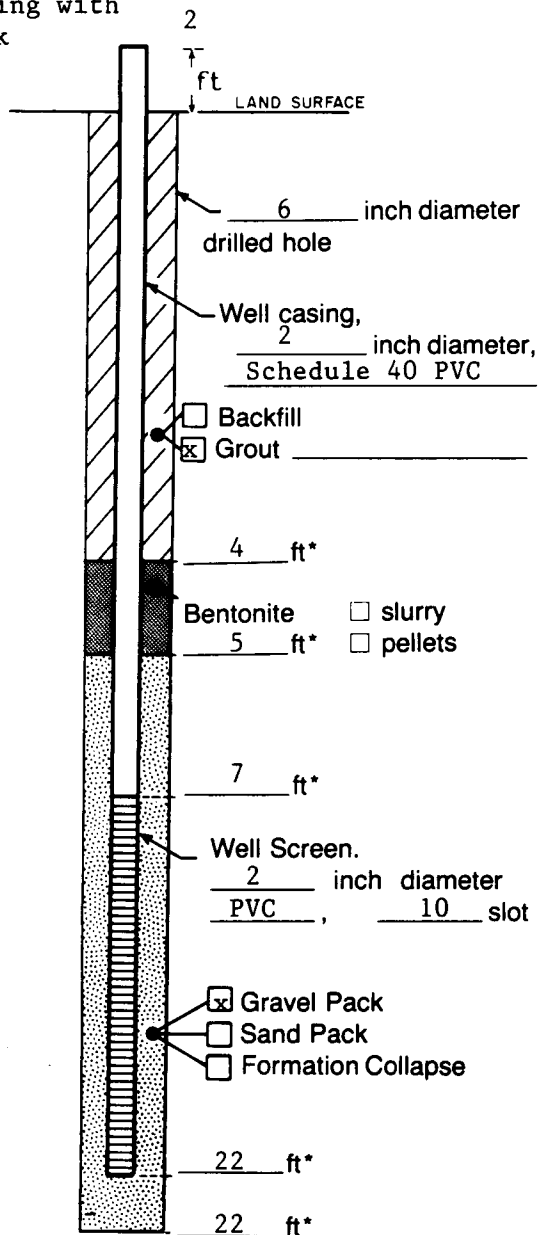
Remarks _____

Prepared by B. Blum

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)

4 inch diameter
protective steel
casing with
lock



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project Monsanto Queeny/NY0308QU04 Well HW-3

Town/City St. Louis

County St. Louis State Missouri

Permit No. _____

Land-Surface Elevation

and Datum 421.99 feet

MSL

☒ Surveyed

☐ Estimated

Installation Date(s) 5/26/88

Drilling Method Hollow Stem Auger (CME-75)

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Not developed.

Fluid Loss During Drilling None gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm

Date _____

Specific Capacity _____ gpm/ft

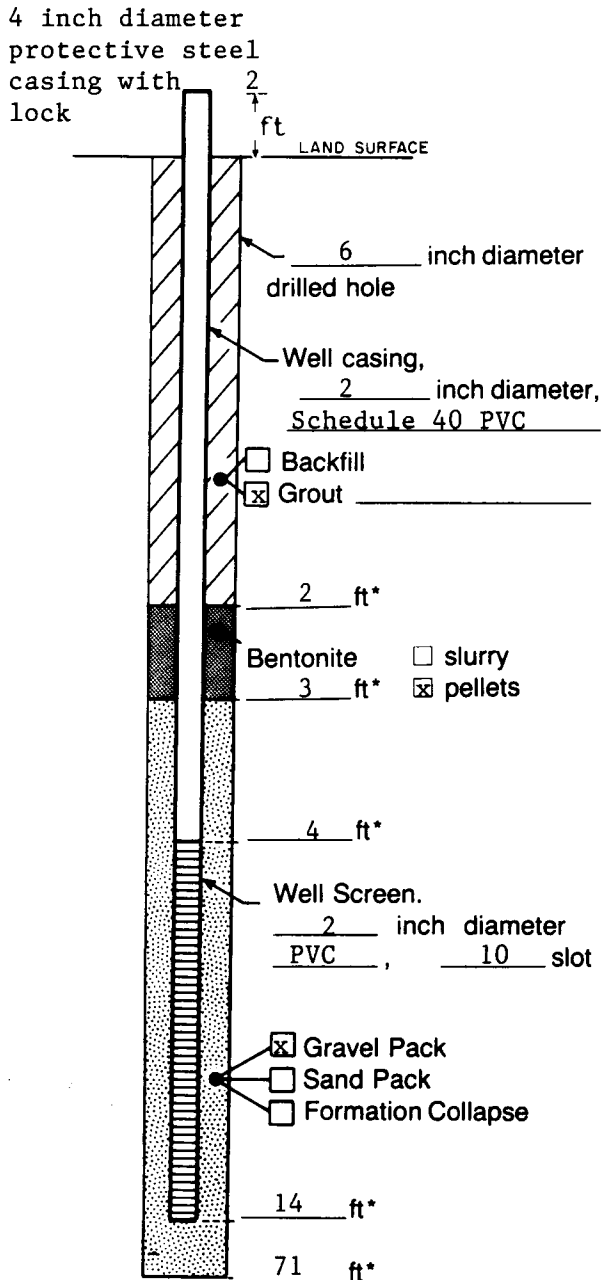
Well Purpose _____

Remarks Well does not yield water.

Prepared by B. Blum

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project Monsanto Queeny/NY0308QU04 Well VW-1

Town/City St. Louis

County St. Louis State Missouri

Permit No. _____

Land-Surface Elevation

and Datum 417.19 feet ☒ Surveyed

MSL ☐ Estimated

Installation Date(s) 5/24/88

Drilling Method Hollow Stem Auger (CME-75)

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid None

Development Technique(s) and Date(s)

Surging with compressed air on 5/27/88

Fluid Loss During Drilling None gallons

Water Removed During Development 25 gallons

Static Depth to Water 8.74 on 5/25/88 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 2 hours

Yield 1/4 gpm Date _____

Specific Capacity _____ gpm/ft

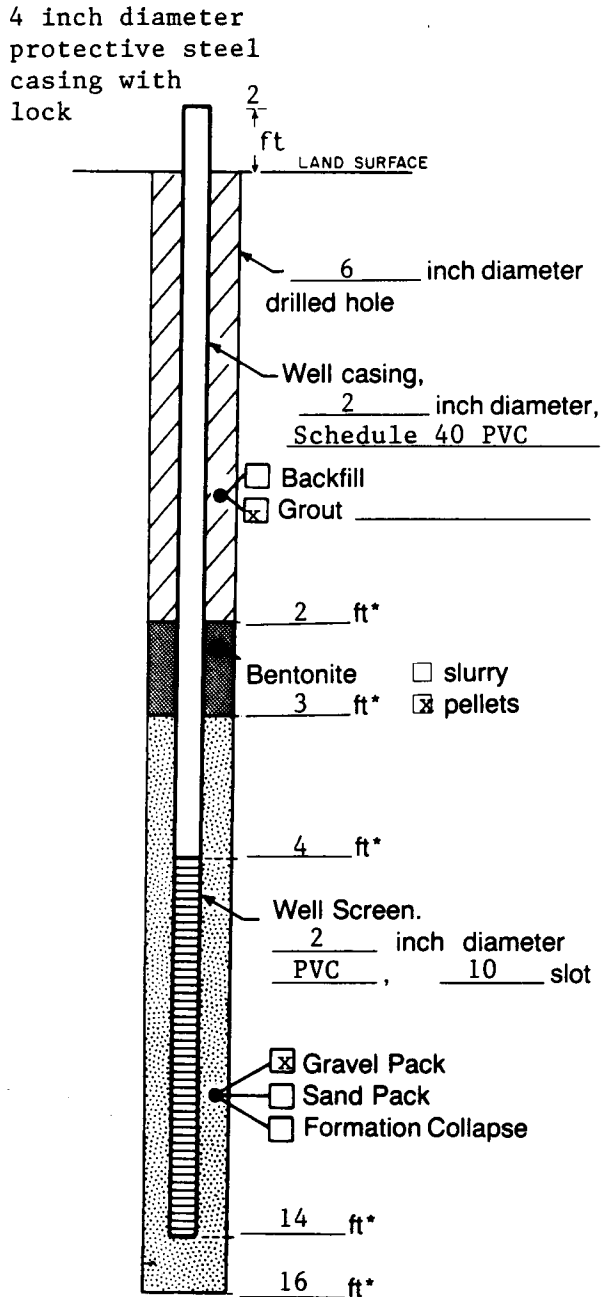
Well Purpose Ground Water Monitoring

Remarks _____

Prepared by B. Blum

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

*Depth Below Land Surface

Project Monsanto Queeny/NY0308QU04 Well VW-2
Town/City St. Louis
County St. Louis State Missouri
Permit No. _____
Land-Surface Elevation
and Datum 417.42 feet ☒ Surveyed
_____ MSL ☐ Estimated
Installation Date(s) 5/24/88
Drilling Method Hollow Stem Auger (CME-75)
Drilling Contractor John Mathes & Associates, Inc.
Drilling Fluid None

Development Technique(s) and Date(s)
Surging with compressed air on 5/27/88

Fluid Loss During Drilling None gallons
Water Removed During Development 25 gallons
Static Depth to Water 9.34 on 5/25/88 feet below M.P.
Pumping Depth to Water _____ feet below M.P.
Pumping Duration 2 hours
Yield 1/4 gpm Date _____
Specific Capacity _____ gpm/ft
Well Purpose Ground Water Monitoring

Remarks _____

Prepared by B. Blum

ETC

JUN 23, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Volatile Compounds - GC/MS Analysis Data (QR01)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5523 GERAGHTY & MILLER GMMONQUPPT WW-1 880531 1800 2

ETC Sample No. Company Facility Sample Point Date Time Elapsed Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concn. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1V	Acrolein	ND	10000	723	677	ND	800	70	ND	800	90
2V	Acrylonitrile	ND	10000	77.9	108	ND	80.0	113	ND	80.0	97
3V	Benzene	3220	440	39.8	55.5	ND	50.0	106	ND	50.0	80
4V	bis(Chloromethyl)ether	ND	1000	ND	ND	ND	0	-	ND	0	-
5V	Bromoform	ND	470	42.7	57.9	ND	50.0	100	ND	50.0	85
6V	Carbon tetrachloride	ND	280	41.2	56.4	ND	50.0	101	ND	50.0	82
7V	Chlorobenzene	18600	600	40.4	54.2	ND	50.0	101	ND	50.0	81
8V	Chlorodibromomethane	ND	310	42.0	56.4	ND	50.0	100	ND	50.0	84
9V	Chloroethane	ND	1000	66.5	71.3	ND	50.0	120	ND	50.0	133
10V	2-Chloroethylvinyl ether	ND	1000	49.2	65.3	ND	50.0	104	ND	50.0	98
11V	Chloroform	ND	160	41.4	62.4	ND	50.0	109	ND	50.0	83
12V	Dichlorobromomethane	ND	220	39.9	53.4	ND	50.0	95	ND	50.0	80
13V	Dichlorodifluoromethane	ND	1000	96.4	107	ND	50.0	0	ND	50.0	193
14V	1,1-Dichloroethane	ND	470	44.5	60.8	ND	50.0	109	ND	50.0	89
15V	1,2-Dichloroethane	ND	280	44.8	64.4	ND	50.0	112	ND	50.0	90
16V	1,1-Dichloroethylene	ND	280	45.0	65.0	ND	50.0	113	ND	50.0	90
17V	1,2-Dichloropropane	ND	600	38.8	54.5	ND	50.0	108	ND	50.0	78
18V	cis-1,3-Dichloropropylene	ND	500	39.9	55.7	ND	50.0	103	ND	50.0	80
19V	Ethylbenzene	BMDL	720	41.2	54.0	ND	50.0	103	ND	50.0	82
20V	Methyl bromide	ND	1000	83.3	75.5	ND	50.0	117	ND	50.0	167
21V	Methyl chloride	ND	1000	54.2	58.7	ND	50.0	99	ND	50.0	108
22V	Methylene chloride	307	280	56.7	72.4	ND	50.0	125	2.77	50.0	108
23V	1,1,2,2-Tetrachloroethane	ND	690	41.9	60.0	ND	50.0	105	ND	50.0	84
24V	Tetrachloroethylene	ND	410	40.8	56.3	ND	50.0	106	ND	50.0	82
25V	Toluene	ND	600	39.5	54.3	ND	50.0	102	ND	50.0	79
26V	1,2-Trans-dichloroethylene	ND	160	40.4	61.0	ND	50.0	109	ND	50.0	81
27V	1,1,1-Trichloroethane	ND	380	48.2	64.0	ND	50.0	114	ND	50.0	96
28V	1,1,2-Trichloroethane	ND	500	40.0	56.0	ND	50.0	101	ND	50.0	80
29V	Trichloroethylene	ND	190	40.3	54.7	ND	50.0	103	ND	50.0	81
30V	Trichlorofluoromethane	ND	1000	50.0	60.5	ND	50.0	113	ND	50.0	100
31V	Vinyl chloride	ND	1000	59.3	72.2	ND	50.0	235	ND	50.0	119
18V	trans-1,3-Dichloropropylene	ND	1000	39.9	54.0	ND	50.0	97	ND	50.0	80

Acrolein and Acrylonitrile values are screen only.
 All zero and variable recoveries have been manually verified.
 Sample/extract required dilution resulting in elevated MDL's.



ETC

AUG 10, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA
Acid Compounds - GC/MS Analysis Data (QR02)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5523 GERAGHTY & MILLER

GMMONQUPPT WW-1

880531 1800 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1A	2-Chlorophenol	53.5	3.5	ND	ND	ND	100	82	53.5	105	56
2A	2,4-Dichlorophenol	ND	2.8	ND	ND	ND	100	86	ND	105	58
3A	2,4-Dimethylphenol	ND	2.8	ND	ND	ND	100	82	ND	105	70
4A	4,6-Dinitro-o-cresol	ND	25	ND	ND	ND	100	38	ND	105	24
5A	2,4-Dinitrophenol	ND	44	ND	ND	ND	100	3	ND	105	21
6A	2-Nitrophenol	ND	3.8	ND	ND	ND	100	83	ND	105	69
7A	4-Nitrophenol	ND	2.5	ND	ND	ND	100	29	ND	105	172
8A	p-Chloro-m-cresol	ND	3.2	ND	ND	ND	100	94	ND	105	57
9A	Pentachlorophenol	ND	3.8	ND	ND	ND	100	33	ND	105	0
10A	Phenol	1580	1.6	ND	ND	ND	100	44	1580	105	83
11A	2,4,6-Trichlorophenol	ND	2.8	ND	ND	ND	100	82	ND	105	

All zero and variable recoveries have been manually verified.

See Comments sheet.

ETC

AUG 22, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5523 GERAGHTY & MILLER

GMMONQUPPT WVV-1

880531 1800 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1B	Acenaphthene	3.11	2.0	ND	ND	ND	100	94	3.11	105	70
2B	Acenaphthylene	ND	3.7	ND	ND	ND	100	92	ND	105	94
3B	Anthracene	BMDL	2.0	7.42	18.4	ND	100	93	1.46	105	43
4B	Benzidine	ND	46	ND	ND	ND	100	8	ND	105	44
5B	Benzo(a)anthracene	BMDL	8.2	8.20	7.56	ND	100	94	1.77	105	49
6B	Benzo(a)pyrene	ND	2.6	8.44	14.6	ND	100	98	ND	105	77
7B	Benzo(b)fluoranthene	ND	5.1	4.27	18.7	ND	100	114	ND	105	105
8B	Benzo(ghi)perylene	ND	4.3	ND	ND	ND	0	-	ND	0	-
9B	Benzo(k)fluoranthene	ND	2.6	ND	ND	ND	100	63	ND	105	99
10B	bis(2-Chloroethoxy)methane	ND	5.6	ND	ND	ND	100	132	ND	105	85
11B	bis(2-Chloroethyl) ether	ND	6.0	ND	ND	ND	100	83	ND	105	51
12B	bis(2-Chloroisopropyl)ether	ND	6.0	ND	ND	ND	100	83	ND	105	63
13B	bis(2-Ethylhexyl)phthalate	BMDL	11	ND	ND	ND	100	90	7.58	105	82
14B	4-Bromophenyl phenyl ether	ND	2.0	ND	ND	ND	100	103	ND	105	59
15B	Butyl benzyl phthalate	ND	11	ND	ND	ND	100	67	ND	105	64
16B	2-Chloronaphthalene	ND	2.0	ND	ND	ND	100	80	ND	105	102
17B	4-Chlorophenyl phenyl ether	ND	4.4	ND	ND	ND	100	93	ND	105	22
18B	Chrysene	2.88	2.6	34.9	51.8	ND	100	80	2.88	105	46
19B	Dibenzo(a,h)anthracene	ND	11	ND	ND	ND	0	-	ND	0	-
20B	1,2-Dichlorobenzene	ND	2.0	ND	ND	ND	100	61	ND	105	40
21B	1,3-Dichlorobenzene	ND	2.0	ND	ND	ND	100	57	ND	105	52
22B	1,4-Dichlorobenzene	ND	4.6	5.40	8.89	ND	100	49	ND	105	42
23B	3,3'-Dichlorobenzidine	ND	17	ND	ND	ND	100	74	ND	105	25
24B	Diethyl phthalate	ND	11	ND	ND	ND	100	3	ND	105	5
25B	Dimethyl phthalate	ND	11	ND	ND	ND	100	5	ND	105	10
26B	Di-n-butyl phthalate	ND	11	ND	ND	ND	100	62	ND	105	18
27B	2,4-Dinitrotoluene	ND	6.0	ND	ND	ND	100	89	ND	105	93
28B	2,6-Dinitrotoluene	ND	2.0	ND	ND	ND	100	97	ND	105	126
29B	Di-n-octyl phthalate	ND	11	ND	ND	ND	100	95	ND	105	95
30B	1,2-Diphenylhydrazine	ND	11	ND	ND	ND	100	99	ND	105	50
31B	Fluoranthene	6.44	2.3	9.12	18.6	ND	100	88	6.44	105	67
32B	Fluorene	4.01	2.0	49.2	81.0	ND	100	94	4.01	105	62

ETC

AUG 22, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5523 GERAGHTY & MILLER

GMMONQUPPT WW-1

880531 1800 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
33B	Hexachlorobenzene	ND	2.0	ND	ND	ND	100	106	ND	105	28
34B	Hexachlorobutadiene	ND	.95	ND	ND	ND	100	53	ND	105	58
35B	Hexachlorocyclopentadiene	ND	11	ND	ND	ND	0	-	ND	0	-
36B	Hexachloroethane	ND	1.7	ND	ND	ND	100	50	ND	105	51
37B	Indeno(1,2,3-c,d)pyrene	ND	4.9	ND	ND	ND	0	-	ND	0	-
38B	Isophorone	ND	2.3	ND	ND	ND	100	112	ND	105	63
39B	Naphthalene	64.2	1.7	6.67	17.0	ND	100	73	64.2	105	127
40B	Nitrobenzene	ND	2.0	ND	ND	ND	100	93	ND	105	74
41B	N-Nitrosodimethylamine	ND	11	ND	ND	ND	0	-	ND	0	-
42B	N-Nitrosodi-n-propylamine	ND	11	ND	ND	ND	100	104	ND	105	63
43B	N-Nitrosodiphenylamine	ND	2.0	ND	ND	ND	100	82	ND	105	16
44B	Phenanthrene	7.90	5.7	62.8	134	ND	100	99	7.90	105	18
45B	Pyrene	5.66	2.0	26.3	55.4	ND	100	89	5.66	105	95
46B	1,2,4-Trichlorobenzene	ND	2.0	ND	ND	ND	100	174	ND	105	55

All zero and variable recoveries have been manually verified.

ETC

AUG 19, 1988
QB9059

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Pesticide/PCB Compounds - GC/MS Analysis Data (QR04)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5523 GERAGHTY & MILLER

COMMONQUPT WW-1

880531 1800 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1P	Aldrin	ND	2.0	ND	ND	ND	100	100	ND	105	17
2P	Alpha-BHC	ND	11	ND	ND	ND	100	7	ND	105	28
3P	Beta-BHC	ND	4.4	ND	ND	ND	100	19	ND	105	12
4P	Gamma-BHC	ND	11	ND	ND	ND	100	21	ND	105	13
5P	Delta-BHC	ND	3.3	ND	ND	ND	100	88	ND	105	19
6P	Chlordane	ND	11	ND	ND	ND	200	80	ND	211	27
7P	4,4'-DDT	ND	2.9	ND	ND	ND	100	94	ND	105	32
8P	4,4'-DDE	ND	5.9	ND	ND	ND	100	97	ND	105	37
9P	4,4'-DDD	ND	4.9	ND	ND	ND	100	97	ND	105	36
10P	Dieldrin	ND	2.6	ND	ND	ND	100	88	ND	105	83
11P	Endosulfan I	ND	11	ND	ND	ND	100	9	ND	105	19
12P	Endosulfan II	ND	11	ND	ND	ND	100	13	ND	105	20
13P	Endosulfan sulfate	ND	5.9	ND	ND	ND	100	45	ND	105	46
14P	Endrin	ND	11	ND	ND	ND	100	93	ND	105	77
15P	Endrin aldehyde	ND	11	ND	ND	ND	100	57	ND	105	79
16P	Heptachlor	ND	2.0	ND	ND	ND	100	99	ND	105	40
17P	Heptachlor epoxide	ND	2.3	ND	ND	ND	100	100	ND	105	19
18P	PCB-1242	ND	38	ND	ND	ND	0	-	ND	0	-
19P	PCB-1254	ND	38	ND	ND	ND	0	-	ND	0	-
20P	PCB-1221	ND	38	ND	ND	ND	0	-	ND	0	-
21P	PCB-1232	ND	38	ND	ND	ND	0	-	ND	0	-
22P	PCB-1248	ND	38	ND	ND	ND	0	-	ND	0	-
23P	PCB-1260	ND	38	ND	ND	ND	100	100	ND	105	42
24P	PCB-1016	ND	38	ND	ND	ND	0	-	ND	0	-
25P	Toxaphene	ND	11	ND	ND	ND	0	-	ND	0	-

Nil zero and variable recoveries have been manually verified.



ETC

JUN 22, 1988
M102

TABLE 1: QUANTITATIVE RESULTS

Metals - Analysis Data (QR52)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5523 GERAGHTY & MILLER

GMMONQUPPT WW-1

880531 1800 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

Compound	Results									
	Sample Concen. ug/l	MDL ug/l								
Antimony	ND	87								
Arsenic	BMDL	50								
Beryllium	ND	.77								
Cadmium	BMDL	2.3								
Chromium	32	24								
Copper	42	12								
Lead	100	72								
Mercury	BMDL	.20								
Nickel	25	17								
Selenium	ND	5.0								
Silver	ND	5.2								
Thallium	ND	10								
Zinc	230	20								

JUN 27, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA									
Conventional Analysis Data (QR10)									
Parameter	Unit	Sample A (QR10)			Sample B (QR10)			Reference Range	
		Mean	SD	CV (%)	Mean	SD	CV (%)	Min	Max
Moisture Content	%	12.5	0.5	4.0	13.2	0.6	4.5	10.0	15.0
Protein Content	%	18.7	0.3	1.6	19.1	0.4	2.1	17.0	20.0
Lipid Content	%	5.2	0.2	3.8	5.5	0.3	5.5	4.0	6.5
Carbohydrate Content	%	62.1	0.4	0.6	61.8	0.5	0.8	60.0	63.0
Calcium Content	mg/g	15.3	0.8	5.2	16.1	1.0	6.2	14.0	18.0
Iron Content	mg/g	2.1	0.1	4.8	2.3	0.2	8.7	2.0	2.5
Copper Content	mg/g	0.5	0.05	10.0	0.55	0.08	14.5	0.5	0.6
Zinc Content	mg/g	8.9	0.4	4.5	9.2	0.5	5.4	8.0	10.0
Phosphorus Content	mg/g	11.4	0.6	5.3	11.8	0.7	5.9	10.5	12.5
Sulfur Content	mg/g	7.6	0.3	3.9	7.9	0.4	5.1	7.0	8.5
Chlorine Content	mg/g	3.2	0.15	4.7	3.4	0.2	5.9	3.0	3.8
Fluorine Content	mg/g	0.8	0.05	6.3	0.85	0.08	9.4	0.8	0.9
Barium Content	mg/g	0.2	0.02	10.0	0.22	0.03	13.6	0.2	0.25
Strontium Content	mg/g	0.1	0.01	10.0	0.11	0.02	18.2	0.1	0.12
Lead Content	mg/g	0.05	0.005	10.0	0.055	0.008	14.5	0.05	0.06
Cadmium Content	mg/g	0.01	0.001	10.0	0.012	0.002	16.7	0.01	0.015
Mercury Content	mg/g	0.005	0.0005	10.0	0.006	0.001	16.7	0.005	0.007
Chromium Content	mg/g	0.02	0.002	10.0	0.025	0.003	12.0	0.02	0.03
Manganese Content	mg/g	0.08	0.008	10.0	0.09	0.01	11.1	0.08	0.1
Cobalt Content	mg/g	0.03	0.003	10.0	0.035	0.004	11.8	0.03	0.04
Nickel Content	mg/g	0.015	0.0015	10.0	0.018	0.002	11.1	0.015	0.02
Selenium Content	mg/g	0.005	0.0005	10.0	0.006	0.0008	13.3	0.005	0.007
Vanadium Content	mg/g	0.002	0.0002	10.0	0.0025	0.0003	12.0	0.002	0.003
Antimony Content	mg/g	0.001	0.0001	10.0	0.0012	0.0002	16.7	0.001	0.0015
Bismuth Content	mg/g	0.0005	0.00005	10.0	0.0006	0.0001	20.0	0.0005	0.0007
Thallium Content	mg/g	0.0002	0.00002	10.0	0.0003	0.00005	50.0	0.0002	0.0004
Plutonium Content	mg/g	0.0001	0.00001	10.0	0.00015	0.00003	66.7	0.0001	0.0002
Uranium Content	mg/g	0.00005	0.000005	10.0	0.00008	0.00001	60.0	0.00005	0.0001

Chain of Custody Data Required for ETC Data Management Summary Reports							
ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours	
BE5523	GERAGHTY & MILLER	GMMONQUPPT WW-1		880531	1800	2	

880531 1800 2

Elapsed
Hours

[illegible]

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA
Volatile Compounds - GC/MS Analysis Data (QR01)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5520 GERAGHTY & MILLER

GMMONQUPPT WW-2

880531 1700 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound <small>Acrolein and Acrylonitrile values are shown only.</small>	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1V	Acrolein	ND	100	721	837	ND	800	93	ND	800	90
2V	Acrylonitrile	ND	100	65.3	87.0	ND	80.0	85	ND	80.0	82
3V	Benzene	ND	4.4	45.9	51.8	ND	50.0	98	ND	50.0	92
4V	bis(Chloromethyl)ether	ND	10	ND	ND	ND	0	-	ND	0	-
5V	Bromoform	ND	4.7	44.7	50.3	ND	50.0	96	ND	50.0	89
6V	Carbon tetrachloride	ND	2.8	43.8	51.4	ND	50.0	99	ND	50.0	88
7V	Chlorobenzene	ND	6.0	45.4	52.6	ND	50.0	99	ND	50.0	91
8V	Chlorodibromomethane	ND	3.1	46.0	50.6	ND	50.0	95	ND	50.0	92
9V	Chloroethane	ND	10	43.9	45.4	ND	50.0	111	ND	50.0	88
10V	2-Chloroethylvinyl ether	ND	10	49.9	57.7	ND	50.0	106	ND	50.0	100
11V	Chloroform	ND	1.6	44.4	52.4	ND	50.0	93	ND	50.0	89
12V	Dichlorobromomethane	ND	2.2	46.5	49.0	ND	50.0	101	ND	50.0	93
13V	Dichlorodifluoromethane	ND	10	61.3	66.3	ND	50.0	178	ND	50.0	123
14V	1,1-Dichloroethane	ND	4.7	44.6	52.4	ND	50.0	91	ND	50.0	89
15V	1,2-Dichloroethane	ND	2.8	43.4	51.0	ND	50.0	93	ND	50.0	87
16V	1,1-Dichloroethylene	ND	2.8	44.4	53.1	ND	50.0	92	ND	50.0	89
17V	1,2-Dichloropropane	ND	6.0	47.1	49.8	ND	50.0	96	ND	50.0	94
18V	cis-1,3-Dichloropropylene	ND	5.0	44.6	50.5	ND	50.0	83	ND	50.0	89
19V	Ethylbenzene	ND	7.2	47.9	51.9	ND	50.0	98	ND	50.0	96
20V	Methyl bromide	ND	10	16.1	21.4	ND	50.0	125	ND	50.0	32
21V	Methyl chloride	ND	10	44.8	47.8	ND	50.0	130	ND	50.0	90
22V	Methylene chloride	ND	2.8	43.3	49.8	5.66	50.0	82	ND	50.0	87
23V	1,1,2,2-Tetrachloroethane	ND	6.9	45.6	4.60	ND	50.0	90	ND	50.0	91
24V	Tetrachloroethylene	ND	4.1	46.2	52.6	ND	50.0	95	ND	50.0	92
25V	Toluene	ND	6.0	47.5	53.1	ND	50.0	97	ND	50.0	95
26V	1,2-Trans-dichloroethylene	2.13	1.6	44.0	53.6	ND	50.0	64	ND	50.0	88
27V	1,1,1-Trichloroethane	ND	3.8	43.3	52.9	ND	50.0	103	ND	50.0	87
28V	1,1,2-Trichloroethane	ND	5.0	43.4	49.5	ND	50.0	99	ND	50.0	87
29V	Trichloroethylene	ND	1.9	46.7	83.2	ND	50.0	104	ND	50.0	93
30V	Trichlorofluoromethane	BMDL	10	57.4	64.6	ND	50.0	107	9.08	50.0	97
31V	Vinyl chloride	ND	10	47.1	52.2	ND	50.0	155	ND	50.0	94
18V	trans-1,3-Dichloropropylene	ND	10	45.6	49.6	ND	50.0	99	ND	50.0	91

ETC

JUL 10, 1988
QA9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Acid Compounds - GC/MS Analysis Data (QR02)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5520 GERAGHTY & MILLER

GMMONQUPPT WW-2

880531 1700 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1A	2-Chlorophenol	12.5	3.5	ND	ND	ND	100	62	ND	125	22
2A	2,4-Dichlorophenol	ND	2.8	ND	ND	ND	100	49	ND	125	87
3A	2,4-Dimethylphenol	ND	2.8	ND	ND	ND	100	53	ND	125	60
4A	4,6-Dinitro-o-cresol	ND	25	ND	ND	ND	100	22	ND	125	76
5A	2,4-Dinitrophenol	ND	44	ND	ND	ND	100	1	ND	125	30
6A	2-Nitrophenol	ND	3.8	ND	ND	ND	100	83	ND	125	85
7A	4-Nitrophenol	ND	2.5	ND	ND	ND	100	11	ND	125	53
8A	p-Chloro-m-cresol	ND	3.2	ND	ND	ND	100	36	ND	125	103
9A	Pentachlorophenol	ND	3.8	ND	ND	ND	100	5	ND	125	49
10A	Phenol	3.44	1.6	ND	ND	ND	100	27	985	125	
11A	2,4,6-Trichlorophenol	ND	2.8	ND	ND	ND	100	70	ND	125	76

All zero and variable recoveries have been manually verified.

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5520 GERAGHTY & MILLER

GMMONQUPPT WW-2

880531 1700 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1B	Acenaphthene	BMDL	2.0	ND	ND	ND	100	74	ND	125	69
2B	Acenaphthylene	ND	3.7	ND	ND	ND	100	70	ND	125	68
3B	Anthracene	ND	2.0	ND	ND	ND	100	81	ND	125	70
4B	Benididine	ND	46	ND	ND	ND	100	98	ND	125	0
5B	Benzo(a)anthracene	ND	8.2	ND	ND	ND	100	78	ND	125	72
6B	Benzo(a)pyrene	ND	2.6	ND	ND	ND	100	81	ND	125	72
7B	Benzo(b)fluoranthene	ND	5.1	ND	ND	ND	100	76	ND	125	63
8B	Benzo(ghi)perylene	ND	4.3	ND	ND	ND	0	-	ND	0	-
9B	Benzo(k)fluoranthene	ND	2.6	ND	ND	ND	100	89	ND	125	87
10B	bis(2-Chloroethoxy)methane	ND	5.6	ND	ND	ND	100	110	ND	125	96
11B	bis(2-Chloroethyl) ether	ND	6.0	ND	ND	ND	100	67	ND	125	79
12B	bis(2-Chloroisopropyl)ether	ND	6.0	ND	ND	ND	100	55	ND	125	91
13B	bis(2-Ethylhexyl)phthalate	ND	11	25.1	ND	ND	100	80	ND	125	78
14B	4-Bromophenyl phenyl ether	ND	2.0	ND	ND	ND	100	66	ND	125	70
15B	Butyl benzyl phthalate	ND	11	ND	ND	ND	100	66	ND	125	70
16B	2-Chloronaphthalene	ND	2.0	ND	ND	ND	100	90	ND	125	67
17B	4-Chlorophenyl phenyl ether	ND	4.4	ND	ND	ND	100	44	ND	125	71
18B	Chrysene	BMDL	2.6	ND	ND	ND	100	79	ND	125	75
19B	Dibenzo(a,h)anthracene	ND	11	ND	ND	ND	0	-	ND	0	-
20B	1,2-Dichlorobenzene	ND	2.0	ND	ND	ND	100	49	ND	125	74
21B	1,3-Dichlorobenzene	ND	2.0	ND	ND	ND	100	43	ND	125	63
22B	1,4-Dichlorobenzene	ND	4.6	ND	ND	ND	100	45	ND	125	45
23B	3,3'-Dichlorobenzidine	ND	17	ND	ND	ND	100	79	ND	125	42
24B	Diethyl phthalate	ND	11	ND	ND	ND	100	17	ND	125	29
25B	Dimethyl phthalate	ND	11	ND	ND	ND	100	3	ND	125	6
26B	Di-n-butyl phthalate	ND	11	ND	ND	ND	100	97	ND	125	61
27B	2,4-Dinitrotoluene	ND	6.0	ND	ND	ND	100	43	ND	125	84
28B	2,6-Dinitrotoluene	ND	2.0	ND	ND	ND	100	40	ND	125	78
29B	Di-n-octyl phthalate	ND	11	23.0	ND	BMDL	100	80	ND	125	76
30B	1,2-Diphenylhydrazine	ND	11	ND	ND	ND	100	40	ND	125	69
31B	Fluoranthene	BMDL	2.3	ND	ND	ND	100	183	ND	125	62
32B	Fluorene	BMDL	2.0	ND	ND	ND	100	50	ND	125	71

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5520 GERAGHTY & MILLER

GMMONQUPPT WW-2

880531 1700 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
33B	Hexachlorobenzene	ND	2.0	ND	ND	ND	100	137	ND	125	76
34B	Hexachlorobutadiene	ND	.95	ND	ND	ND	100	46	ND	125	54
35B	Hexachlorocyclopentadiene	ND	11	ND	ND	ND	0	-	ND	0	-
36B	Hexachloroethane	ND	1.7	ND	ND	ND	100	51	ND	125	51
37B	Indeno(1,2,3-c,d)pyrene	ND	4.9	ND	ND	ND	0	-	ND	0	-
38B	Isophorone	ND	2.3	ND	ND	ND	100	88	ND	125	70
39B	Naphthalene	49.4	1.7	ND	ND	ND	100	65	ND	125	68
40B	Nitrobenzene	ND	2.0	ND	ND	ND	100	78	ND	125	71
41B	N-Nitrosodimethylamine	ND	11	ND	ND	ND	0	-	ND	0	-
42B	N-Nitrosodi-n-propylamine	ND	11	ND	ND	ND	100	97	ND	125	68
43B	N-Nitrosodiphenylamine	ND	2.0	ND	ND	ND	100	35	ND	125	62
44B	Phenanthrene	BMDL	5.7	ND	ND	ND	100	76	ND	125	68
45B	Pyrene	BMDL	2.0	ND	ND	ND	100	201	ND	125	59
46B	1,2,4-Trichlorobenzene	ND	2.0	ND	ND	ND	100	87	ND	125	79

All zero and variable recoveries have been manually verified.

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Pesticide/PCB Compounds - GC/MS Analysis Data (QR04)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5520 GERAGHTY & MILLER

GMMONQUPPT WW-2

880531 1700 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1P	Aldrin	ND	2.0	ND	ND	ND	100	63	ND	125	64
2P	Alpha-BHC	ND	11	ND	ND	ND	100	36	ND	125	48
3P	Beta-BHC	ND	4.4	ND	ND	ND	100	93	ND	125	57
4P	Gamma-BHC	ND	11	ND	ND	ND	100	34	ND	125	46
5P	Delta-BHC	ND	3.3	ND	ND	ND	100	15	ND	125	22
6P	Chlordane	ND	11	ND	ND	ND	200	20	ND	250	84
7P	4,4'-DDT	ND	2.9	ND	ND	ND	100	57	ND	125	66
8P	4,4'-DDE	ND	5.9	ND	ND	ND	100	41	ND	125	83
9P	4,4'-DDD	ND	4.9	ND	ND	ND	100	61	ND	125	70
10P	Dieldrin	ND	2.6	ND	ND	ND	100	28	ND	125	84
11P	Endosulfan I	ND	11	ND	ND	ND	100	3	ND	125	25
12P	Endosulfan II	ND	11	ND	ND	ND	100	16	ND	125	20
13P	Endosulfan sulfate	ND	5.9	ND	ND	ND	100	46	ND	125	63
14P	Endrin	ND	11	ND	ND	ND	100	33	ND	125	86
15P	Endrin aldehyde	ND	11	ND	ND	ND	100	36	ND	125	8
16P	Heptachlor	ND	2.0	ND	ND	ND	100	55	ND	125	66
17P	Heptachlor epoxide	ND	2.3	ND	ND	ND	100	17	ND	125	97
18P	PCB-1242	ND	38	ND	ND	ND	0	-	ND	0	-
19P	PCB-1254	ND	38	ND	ND	ND	0	-	ND	0	-
20P	PCB-1221	ND	38	ND	ND	ND	0	-	ND	0	-
21P	PCB-1232	ND	38	ND	ND	ND	0	-	ND	0	-
22P	PCB-1248	ND	38	ND	ND	ND	0	-	ND	0	-
23P	PCB-1260	ND	38	ND	ND	ND	100	97	ND	125	81
24P	PCB-1016	ND	38	ND	ND	ND	0	-	ND	0	-
25P	Toxaphene	ND	11	ND	ND	ND	0	-	ND	0	-

All zero and variable recoveries have been manually verified.

ETC

JUN 21, 1988
M99

TABLE 1: QUANTITATIVE RESULTS

Metals - Analysis Data (QR52)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5520 GERAGHTY & MILLER GMMONQUPPT WW-2 880531 1700 2
ETC Sample No. Company Facility Sample Point Date Time Elapsed Hours

Compound	Results									
	Sample Concen. ug/l	MDL ug/l								
Antimony	ND	77								
Arsenic	BMDL	10								
Beryllium	BMDL	.54								
Cadmium	ND	4.6								
Chromium	ND	26								
Copper	BMDL	13								
Lead	ND	51								
Mercury	ND	.20								
Nickel	BMDL	18								
Selenium	ND	5.0								
Silver	ND	18								
Thallium	ND	10								
Zinc	39	20								

ETC

JUN 29, 1998

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Volatile Compounds - GC/MS Analysis Data (QR01)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5521 GERAGHTY & MILLER GMMONQUPPT VWV-10 880531 1730 2
 ETC Sample No. Company Facility Sample Point Date Time Elapsed
 Hours

VW-2
Replicate

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen, ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1V Acrolein		ND	10000	662	656	ND	800	89	ND	800	83
2V Acrylonitrile		ND	10000	79.4	73.3	ND	80.0	92	ND	80.0	99
3V Benzene		ND	440	46.2	46.6	ND	50.0	93	ND	50.0	92
4V bis(Chloromethyl)ether		ND	1000	ND	ND	ND	0	-	ND	0	-
5V Bromoform		ND	470	47.1	47.8	ND	50.0	90	ND	50.0	94
6V Carbon tetrachloride		ND	280	52.5	54.5	ND	50.0	95	ND	50.0	105
7V Chlorobenzene		4490	600	48.1	49.3	ND	50.0	97	ND	50.0	96
8V Chlorodibromomethane		ND	310	48.2	50.1	ND	50.0	96	ND	50.0	96
9V Chloroethane		ND	1000	39.9	55.9	ND	50.0	105	ND	50.0	80
10V 2-Chloroethylvinyl ether		ND	1000	46.2	44.7	ND	50.0	103	ND	50.0	92
11V Chloroform		ND	160	50.8	50.7	ND	50.0	96	ND	50.0	102
12V Dichlorobromomethane		ND	220	51.5	50.5	ND	50.0	92	ND	50.0	103
13V Dichlorodifluoromethane		ND	1000	65.3	61.1	ND	50.0	108	ND	50.0	131
14V 1,1-Dichloroethane		ND	470	51.4	47.8	ND	50.0	96	ND	50.0	103
15V 1,2-Dichloroethane		ND	280	54.0	50.6	ND	50.0	92	ND	50.0	108
16V 1,1-Dichloroethylene		ND	280	53.1	50.6	ND	50.0	99	ND	50.0	106
17V 1,2-Dichloropropane		ND	600	46.5	46.0	ND	50.0	91	ND	50.0	93
18V cis-1,3-Dichloropropylene		ND	500	49.3	49.7	ND	50.0	95	ND	50.0	99
19V Ethylbenzene		ND	720	50.2	49.6	ND	50.0	98	ND	50.0	100
20V Methyl bromide		ND	1000	ND	ND	ND	50.0	108	ND	50.0	0
21V Methyl chloride		ND	1000	53.4	57.6	ND	50.0	120	ND	50.0	107
22V Methylene chloride		292	280	52.5	51.0	ND	50.0	98	ND	50.0	105
23V 1,1,2,2-Tetrachloroethane		ND	690	ND	54.3	ND	50.0	0	ND	50.0	0
24V Tetrachloroethylene		ND	410	48.7	48.8	ND	50.0	95	ND	50.0	97
25V Toluene		ND	600	48.7	50.6	ND	50.0	98	ND	50.0	97
26V 1,2-Trans-dichloroethylene		ND	160	51.2	48.9	ND	50.0	97	ND	50.0	102
27V 1,1,1-Trichloroethane		ND	380	52.1	52.9	ND	50.0	99	ND	50.0	104
28V 1,1,2-Trichloroethane		ND	500	47.9	46.2	ND	50.0	89	ND	50.0	96
29V Trichloroethylene		ND	190	67.7	43.3	ND	50.0	130	ND	50.0	135
30V Trichlorofluoromethane		ND	1000	55.6	53.0	ND	50.0	110	ND	50.0	111
31V Vinyl chloride		ND	1000	58.2	56.1	ND	50.0	109	ND	50.0	116
18V trans-1,3-Dichloropropylene		ND	1000	49.3	50.5	ND	50.0	92	ND	50.0	99

Acrolein and Acrylonitrile values are screen only.
 All zero and variable recoveries have been manually verified.
 Sample/extract required dilution resulting in elevated MDL's.

ETC

JUL 10, 1988
QA9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Acid Compounds - GC/MS Analysis Data (QR02)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5521 GERAGHTY & MILLER

GMMONQUPPT WW-10

880531 1730 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
HoursVW-2
Replicate

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concn. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concn. Added ug/l	% Recov	Unspiked Sample ug/l	Concn. Added ug/l	% Recov
1A	2-Chlorophenol	14.8	3.6	ND	ND	ND	100	62	ND	125	22
2A	2,4-Dichlorophenol	ND	3.0	ND	ND	ND	100	49	ND	125	87
3A	2,4-Dimethylphenol	BMDL	3.0	ND	ND	ND	100	53	ND	125	60
4A	4,6-Dinitro-o-cresol	ND	26	ND	ND	ND	100	22	ND	125	76
5A	2,4-Dinitrophenol	ND	46	ND	ND	ND	100	1	ND	125	30
6A	2-Nitrophenol	ND	4.0	ND	ND	ND	100	83	ND	125	85
7A	4-Nitrophenol	ND	2.6	ND	ND	ND	100	11	ND	125	53
8A	p-Chloro-m-cresol	ND	3.3	ND	ND	ND	100	36	ND	125	103
9A	Pentachlorophenol	ND	4.0	ND	ND	ND	100	5	ND	125	49
10A	Phenol	4.04	1.6	ND	ND	ND	100	27	985	125	1
11A	2,4,6-Trichlorophenol	ND	3.0	ND	ND	ND	100	70	ND	125	76

All zero and variable recoveries have been manually verified.

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5521 GERAGHTY & MILLER

GMMONQUPPT WW-10

880531 1730 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
HoursVW-2
Replicate

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concn. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1B	Acenaphthene	ND	2.1	ND	ND	ND	100	74	ND	125	69
2B	Acenaphthylene	ND	3.8	ND	ND	ND	100	70	ND	125	68
3B	Anthracene	ND	2.1	ND	ND	ND	100	81	ND	125	70
4B	Benizidine	ND	48	ND	ND	ND	100	98	ND	125	0
5B	Benzo(a)anthracene	ND	8.6	ND	ND	ND	100	78	ND	125	72
6B	Benzo(a)pyrene	ND	2.7	ND	ND	ND	100	81	ND	125	72
7B	Benzo(b)fluoranthene	ND	5.3	ND	ND	ND	100	76	ND	125	63
8B	Benzo(ghi)perylene	ND	4.5	ND	ND	ND	0	-	ND	0	-
9B	Benzo(k)fluoranthene	ND	2.7	ND	ND	ND	100	89	ND	125	87
10B	bis(2-Chloroethoxy)methane	ND	5.8	ND	ND	ND	100	110	ND	125	96
11B	bis(2-Chloroethyl) ether	ND	6.3	ND	ND	ND	100	67	ND	125	79
12B	bis(2-Chloroisopropyl)ether	ND	6.3	ND	ND	ND	100	55	ND	125	91
13B	bis(2-Ethylhexyl)phthalate	ND	11	25.1	ND	ND	100	80	ND	125	78
14B	4-Bromophenyl phenyl ether	ND	2.1	ND	ND	ND	100	66	ND	125	70
15B	Butyl benzyl phthalate	ND	11	ND	ND	ND	100	66	ND	125	70
16B	2-Chloronaphthalene	ND	2.1	ND	ND	ND	100	90	ND	125	67
17B	4-Chlorophenyl phenyl ether	ND	4.6	ND	ND	ND	100	44	ND	125	71
18B	Chrysene	ND	2.7	ND	ND	ND	100	79	ND	125	75
19B	Dibenzo(a,h)anthracene	ND	11	ND	ND	ND	0	-	ND	0	-
20B	1,2-Dichlorobenzene	ND	2.1	ND	ND	ND	100	49	ND	125	74
21B	1,3-Dichlorobenzene	ND	2.1	ND	ND	ND	100	43	ND	125	63
22B	1,4-Dichlorobenzene	ND	4.8	ND	ND	ND	100	45	ND	125	45
23B	3,3'-Dichlorobenzidine	ND	18	ND	ND	ND	100	79	ND	125	42
24B	Diethyl phthalate	ND	11	ND	ND	ND	100	17	ND	125	29
25B	Dimethyl phthalate	ND	11	ND	ND	ND	100	3	ND	125	6
26B	Di-n-butyl phthalate	ND	11	ND	ND	ND	100	97	ND	125	61
27B	2,4-Dinitrotoluene	ND	6.3	ND	ND	ND	100	43	ND	125	84
28B	2,6-Dinitrotoluene	ND	2.1	ND	ND	ND	100	40	ND	125	78
29B	Di-n-octyl phthalate	ND	11	23.0	ND	ND	100	80	ND	125	76
30B	1,2-Diphenylhydrazine	ND	11	ND	ND	ND	100	40	ND	125	69
31B	Fluoranthene	BMDL	2.4	ND	ND	ND	100	183	ND	125	62
32B	Fluorene	BMDL	2.1	ND	ND	ND	100	50	ND	125	71

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5521 GERAGHTY & MILLER

COMMONQUPPT WW-10

880531 1730 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time Elapsed
HoursVW-2
Replicate

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
33B	Hexachlorobenzene	ND	2.1	ND	ND	ND	100	137	ND	125	76
34B	Hexachlorobutadiene	ND	.99	ND	ND	ND	100	46	ND	125	54
35B	Hexachlorocyclopentadiene	ND	11	ND	ND	ND	0	-	ND	0	-
36B	Hexachloroethane	ND	1.8	ND	ND	ND	100	51	ND	125	51
37B	Indeno(1,2,3-c,d)pyrene	ND	5.2	ND	ND	ND	0	-	ND	0	-
38B	Isophorone	ND	2.4	ND	ND	ND	100	88	ND	125	70
39B	Naphthalene	38.1	1.8	ND	ND	ND	100	65	ND	125	68
40B	Nitrobenzene	ND	2.1	ND	ND	ND	100	78	ND	125	71
41B	N-Nitrosodimethylamine	ND	11	ND	ND	ND	0	-	ND	0	-
42B	N-Nitrosodi-n-propylamine	ND	11	ND	ND	ND	100	97	ND	125	68
43B	N-Nitrosodiphenylamine	ND	2.1	ND	ND	ND	100	35	ND	125	62
44B	Phenanthrene	BMDL	5.9	ND	ND	ND	100	76	ND	125	68
45B	Pyrene	ND	2.1	ND	ND	ND	100	201	ND	125	59
46B	1,2,4-Trichlorobenzene	ND	2.1	ND	ND	ND	100	87	ND	125	79

All zero and variable recoveries have been manually verified.

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Pesticide/PCB Compounds - GC/MS Analysis Data (QR04)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5521 GERAGHTY & MILLER

GMMONQUPPT WW-10

880531 1730 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time Elapsed
HoursVW-2
Replicate

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1P Aldrin		ND	2.1	ND	ND	ND	100	63	ND	125	64
2P Alpha-BHC		ND	11	ND	ND	ND	100	36	ND	125	48
3P Beta-BHC		ND	4.6	ND	ND	ND	100	93	ND	125	57
4P Gamma-BHC		ND	11	ND	ND	ND	100	34	ND	125	46
5P Delta-BHC		ND	3.4	ND	ND	ND	100	15	ND	125	22
6P Chlordane		ND	11	ND	ND	ND	200	20	ND	250	84
7P 4,4'-DDT		ND	3.1	ND	ND	ND	100	57	ND	125	66
8P 4,4'-DDE		ND	6.2	ND	ND	ND	100	41	ND	125	83
9P 4,4'-DDD		ND	5.2	ND	ND	ND	100	61	ND	125	70
10P Dieldrin		ND	2.7	ND	ND	ND	100	28	ND	125	84
11P Endosulfan I		ND	11	ND	ND	ND	100	3	ND	125	25
12P Endosulfan II		ND	11	ND	ND	ND	100	16	ND	125	20
13P Endosulfan sulfate		ND	6.2	ND	ND	ND	100	46	ND	125	63
14P Endrin		ND	11	ND	ND	ND	100	33	ND	125	86
15P Endrin aldehyde		ND	11	ND	ND	ND	100	36	ND	125	8
16P Heptachlor		ND	2.1	ND	ND	ND	100	55	ND	125	66
17P Heptachlor epoxide		ND	2.4	ND	ND	ND	100	17	ND	125	97
18P PCB-1242		ND	40	ND	ND	ND	0	-	ND	0	-
19P PCB-1254		ND	40	ND	ND	ND	0	-	ND	0	-
20P PCB-1221		ND	40	ND	ND	ND	0	-	ND	0	-
21P PCB-1232		ND	40	ND	ND	ND	0	-	ND	0	-
22P PCB-1248		ND	40	ND	ND	ND	0	-	ND	0	-
23P PCB-1260		ND	40	ND	ND	ND	100	97	ND	125	81
24P PCB-1016		ND	40	ND	ND	ND	0	-	ND	0	-
25P Toxaphene		ND	11	ND	ND	ND	0	-	ND	0	-

All zero and variable recoveries have been manually verified.

ETC

JUN 21, 1988
M99

TABLE 1: QUANTITATIVE RESULTS

Metals - Analysis Data (QR52)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5521 GERAGHTY & MILLER

GMMONQUPPT WW-10

880531 1730 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
HoursVW-2
Replicate

Compound	Results									
	Sample Concen. ug/l	MDL ug/l								
Antimony	ND	77								
Arsenic	BMDL	10								
Beryllium	BMDL	54								
Cadmium	ND	4.6								
Chromium	ND	26								
Copper	BMDL	13								
Lead	BMDL	51								
Mercury	ND	20								
Nickel	BMDL	18								
Selenium	ND	5.0								
Silver	ND	18								
Thallium	ND	10								
Zinc	72	20								

ETC

ETC

AUG 26, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Volatile Compounds - GC/MS Analysis Data (QR01)

VOC Reanalysis
of VW-2

Chain of Custody Data Required for ETC Data Management Summary Reports

BG3370 GERAGHTY & MILLER

GMMONQUPPT WW-2

880531 1700 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concn. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concn. Added ug/l	% Recov	Unspiked Sample ug/l	Concn. Added ug/l	% Recov
1V Acrolein		ND	10000	55.8	1190	ND	800	112	ND	800	7
2V Acrylonitrile		ND	10000	74.7	109	ND	80.0	104	ND	80.0	93
3V Benzene		BMDL	440	48.0	58.2	ND	50.0	102	ND	50.0	96
4V bis(Chloromethyl)ether		ND	1000	ND	ND	ND	0	-	ND	0	-
5V Bromoform		ND	470	45.8	81.1	ND	50.0	99	ND	50.0	92
6V Carbon tetrachloride		ND	280	45.3	58.1	ND	50.0	103	ND	50.0	91
7V Chlorobenzene		5780	600	47.2	63.2	ND	50.0	99	ND	50.0	94
8V Chlorodibromomethane		ND	310	47.6	72.3	ND	50.0	102	ND	50.0	95
9V Chloroethane		ND	1000	57.2	55.5	ND	50.0	88	ND	50.0	114
10V 2-Chloroethylvinyl ether		ND	1000	49.4	57.2	ND	50.0	86	ND	50.0	99
11V Chloroform		ND	160	48.8	57.4	ND	50.0	101	ND	50.0	98
12V Dichlorobromomethane		ND	220	47.9	61.7	ND	50.0	100	ND	50.0	96
13V Dichlorodifluoromethane		ND	1000	96.0	53.6	ND	50.0	88	ND	50.0	192
14V 1,1-Dichloroethane		ND	470	48.7	54.7	ND	50.0	102	ND	50.0	97
15V 1,2-Dichloroethane		ND	280	48.7	58.7	ND	50.0	102	ND	50.0	97
16V 1,1-Dichloroethylene		ND	280	47.2	53.8	ND	50.0	102	ND	50.0	94
17V 1,2-Dichloropropane		ND	600	49.1	59.2	ND	50.0	102	ND	50.0	98
18V cis-1,3-Dichloropropylene		ND	500	45.5	61.1	ND	50.0	102	ND	50.0	91
19V Ethylbenzene		ND	720	44.4	64.0	ND	50.0	98	ND	50.0	89
20V Methyl bromide		ND	1000	59.6	44.5	ND	50.0	88	ND	50.0	119
21V Methyl chloride		ND	1000	60.4	49.4	ND	50.0	89	ND	50.0	121
22V Methylene chloride		711	280	70.5	49.6	8.32	50.0	72	9.44	50.0	122
23V 1,1,2,2-Tetrachloroethane		ND	690	43.4	60.0	ND	50.0	101	ND	50.0	87
24V Tetrachloroethylene		ND	410	44.1	64.1	ND	50.0	100	ND	50.0	88
25V Toluene		ND	600	43.3	60.4	ND	50.0	98	ND	50.0	87
26V 1,2-Trans-dichloroethylene		ND	160	47.0	51.5	ND	50.0	102	ND	50.0	94
27V 1,1,1-Trichloroethane		ND	380	47.0	57.9	ND	50.0	102	ND	50.0	94
28V 1,1,2-Trichloroethane		ND	500	49.6	71.7	ND	50.0	105	ND	50.0	99
29V Trichloroethylene		ND	190	48.6	47.6	ND	50.0	102	ND	50.0	97
30V Trichlorofluoromethane		ND	1000	57.1	54.8	ND	50.0	88	ND	50.0	114
31V Vinyl chloride		ND	1000	76.6	60.0	ND	50.0	80	ND	50.0	153
18V trans-1,3-Dichloropropylene		ND	1000	45.5	63.7	ND	50.0	105	ND	50.0	91

Acrolein and Acrylonitrile values are screen only.

All zero and variable recoveries have been manually verified.

Sample/extract required dilution resulting in elevated MDL's.

ETC

AUG 26, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Volatile Compounds - GC/MS Analysis Data (QR01)

VOC Reanalysis
of VW-2
Replicate

Chain of Custody Data Required for ETC Data Management Summary Reports

BG3371 GERAGHTY & MILLER

GMMONQUPPT WWV-10

880531 1730 2

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1V Acrolein	ND	10000		55.8	1190	ND	800	112	ND	800	7
2V Acrylonitrile	ND	10000		74.7	109	ND	80.0	104	ND	80.0	93
3V Benzene	BMDL	440		48.0	58.2	ND	50.0	102	ND	50.0	96
4V bis(Chloromethyl)ether	ND	1000		ND	ND	ND	0	-	ND	0	-
5V Bromoform	ND	470		45.8	81.1	ND	50.0	99	ND	50.0	92
6V Carbon tetrachloride	ND	280		45.3	58.1	ND	50.0	103	ND	50.0	91
7V Chlorobenzene	7840	600		47.2	63.2	ND	50.0	99	ND	50.0	94
8V Chlorodibromomethane	ND	310		47.6	72.3	ND	50.0	102	ND	50.0	95
9V Chloroethane	ND	1000		57.2	55.5	ND	50.0	88	ND	50.0	114
10V 2-Chloroethylvinyl ether	ND	1000		49.4	57.2	ND	50.0	86	ND	50.0	99
11V Chloroform	ND	160		48.8	57.4	ND	50.0	101	ND	50.0	98
12V Dichlorobromomethane	ND	220		47.9	61.7	ND	50.0	100	ND	50.0	96
13V Dichlorodifluoromethane	ND	1000		96.0	53.6	ND	50.0	88	ND	50.0	192
14V 1,1-Dichloroethane	ND	470		48.7	54.7	ND	50.0	102	ND	50.0	97
15V 1,2-Dichloroethane	ND	280		48.7	58.7	ND	50.0	102	ND	50.0	97
16V 1,1-Dichloroethylene	ND	280		47.2	53.8	ND	50.0	102	ND	50.0	94
17V 1,2-Dichloropropane	ND	600		49.1	59.2	ND	50.0	102	ND	50.0	98
18V cis-1,3-Dichloropropylene	ND	500		45.5	61.1	ND	50.0	102	ND	50.0	91
19V Ethylbenzene	ND	720		44.4	64.0	ND	50.0	98	ND	50.0	89
20V Methyl bromide	ND	1000		59.6	44.5	ND	50.0	88	ND	50.0	119
21V Methyl chloride	ND	1000		60.4	49.4	ND	50.0	89	ND	50.0	121
22V Methylene chloride	729	280		70.5	49.6	8.32	50.0	72	9.44	50.0	122
23V 1,1,2,2-Tetrachloroethane	ND	690		43.4	60.0	ND	50.0	101	ND	50.0	87
24V Tetrachloroethylene	ND	410		44.1	64.1	ND	50.0	100	ND	50.0	88
25V Toluene	ND	600		43.3	60.4	ND	50.0	98	ND	50.0	87
26V 1,2-Trans-dichloroethylene	ND	160		47.0	51.5	ND	50.0	102	ND	50.0	94
27V 1,1,1-Trichloroethane	ND	380		47.0	57.9	ND	50.0	102	ND	50.0	94
28V 1,1,2-Trichloroethane	ND	500		49.6	71.7	ND	50.0	105	ND	50.0	99
29V Trichloroethylene	ND	190		48.6	47.6	ND	50.0	102	ND	50.0	97
30V Trichlorofluoromethane	ND	1000		57.1	54.8	ND	50.0	88	ND	50.0	114
31V Vinyl chloride	ND	1000		76.6	60.0	ND	50.0	80	ND	50.0	153
18V trans-1,3-Dichloropropylene	ND	1000		45.5	63.7	ND	50.0	105	ND	50.0	91

Acrolein and Acrylonitrile values are screen only.

All zero and variable recoveries have been manually verified.

Sample/extract required dilution resulting in elevated MDL's.

JUN 16, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA
Volatile Compounds - GC/MS Analysis Data (QR01)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5519 GERAGHTY & MILLER

GMMONQUPPT WHW-1

880531 1320 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound <small>Acrolein and Acrylonitrile values are screen only.</small>	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1V Acrolein		ND	100	721	837	ND	800	93	ND	800	90
2V Acrylonitrile		ND	100	65.3	87.0	ND	80.0	85	ND	80.0	82
3V Benzene		ND	4.4	45.9	51.8	ND	50.0	98	ND	50.0	92
4V bis(Chloromethyl)ether		ND	10	ND	ND	ND	0	-	ND	0	-
5V Bromoform		ND	4.7	44.7	50.3	ND	50.0	96	ND	50.0	89
6V Carbon tetrachloride		ND	2.8	43.8	51.4	ND	50.0	99	ND	50.0	88
7V Chlorobenzene		ND	6.0	45.4	52.6	ND	50.0	99	ND	50.0	91
8V Chlorodibromomethane		ND	3.1	46.0	50.6	ND	50.0	95	ND	50.0	92
9V Chloroethane		ND	10	43.9	45.4	ND	50.0	111	ND	50.0	88
10V 2-Chloroethylvinyl ether		ND	10	49.9	57.7	ND	50.0	106	ND	50.0	100
11V Chloroform		ND	1.6	44.4	52.4	ND	50.0	93	ND	50.0	89
12V Dichlorobromomethane		ND	2.2	46.5	49.0	ND	50.0	101	ND	50.0	93
13V Dichlorodifluoromethane		ND	10	61.3	66.3	ND	50.0	178	ND	50.0	123
14V 1,1-Dichloroethane		ND	4.7	44.6	52.4	ND	50.0	91	ND	50.0	89
15V 1,2-Dichloroethane		ND	2.8	43.4	51.0	ND	50.0	93	ND	50.0	87
16V 1,1-Dichloroethylene		BMDL	2.8	44.4	53.1	ND	50.0	92	ND	50.0	89
17V 1,2-Dichloropropane		ND	6.0	47.1	49.8	ND	50.0	96	ND	50.0	94
18V cis-1,3-Dichloropropylene		ND	5.0	44.6	50.5	ND	50.0	83	ND	50.0	89
19V Ethylbenzene		ND	7.2	47.9	51.9	ND	50.0	98	ND	50.0	96
20V Methyl bromide		ND	10	16.1	21.4	ND	50.0	125	ND	50.0	32
21V Methyl chloride		ND	10	44.8	47.8	ND	50.0	130	ND	50.0	90
22V Methylene chloride		ND	2.8	43.3	49.8	5.66	50.0	82	ND	50.0	87
23V 1,1,2,2-Tetrachloroethane		ND	6.9	45.6	4.60	ND	50.0	90	ND	50.0	91
24V Tetrachloroethylene		ND	4.1	46.2	52.6	ND	50.0	95	ND	50.0	92
25V Toluene		ND	6.0	47.5	53.1	ND	50.0	97	ND	50.0	95
26V 1,2-Trans-dichloroethylene		492	1.6	44.0	53.6	ND	50.0	64	ND	50.0	88
27V 1,1,1-Trichloroethane		ND	3.8	43.3	52.9	ND	50.0	103	ND	50.0	87
28V 1,1,2-Trichloroethane		ND	5.0	43.4	49.5	ND	50.0	99	ND	50.0	87
29V Trichloroethylene		264	1.9	46.7	83.2	ND	50.0	104	ND	50.0	93
30V Trichlorofluoromethane		BMDL	10	57.4	64.6	ND	50.0	107	9.08	50.0	97
31V Vinyl chloride		ND	10	47.1	52.2	ND	50.0	155	ND	50.0	94
18V trans-1,3-Dichloropropylene		ND	10	45.6	49.6	ND	50.0	99	ND	50.0	91

ETC

JUL 10. 1988
QA9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Acid Compounds - GC/MS Analysis Data (QR02)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5519 GERAGHTY & MILLER

GMMONQUPPT WHW-1

880531 1320 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1A	2-Chlorophenol	ND	3.7	ND	ND	ND	100	62	ND	125	22
2A	2,4-Dichlorophenol	ND	3.0	ND	ND	ND	100	49	ND	125	87
3A	2,4-Dimethylphenol	ND	3.0	ND	ND	ND	100	53	ND	125	60
4A	4,6-Dinitro-o-cresol	ND	27	ND	ND	ND	100	22	ND	125	76
5A	2,4-Dinitrophenol	ND	47	ND	ND	ND	100	1	ND	125	30
6A	2-Nitrophenol	ND	4.0	ND	ND	ND	100	83	ND	125	85
7A	4-Nitrophenol	ND	2.7	ND	ND	ND	100	11	ND	125	53
8A	p-Chloro-m-cresol	ND	3.3	ND	ND	ND	100	36	ND	125	103
9A	Pentachlorophenol	ND	4.0	ND	ND	ND	100	5	ND	125	49
10A	Phenol	ND	1.7	ND	ND	ND	100	27	985	125	1
11A	2,4,6-Trichlorophenol	ND	3.0	ND	ND	ND	100	70	ND	125	76

All zero and variable recoveries have been manually verified.

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5519 GERAGHTY & MILLER

GMMONQUPPT WHW-1

880531 1320 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1B	Acenaphthene	ND	2.1	ND	ND	ND	100	74	ND	125	69
2B	Acenaphthylene	ND	3.9	ND	ND	ND	100	70	ND	125	68
3B	Anthracene	ND	2.1	ND	ND	ND	100	81	ND	125	70
4B	Benidine	ND	49	ND	ND	ND	100	98	ND	125	0
5B	Benzo(a)anthracene	ND	8.7	ND	ND	ND	100	78	ND	125	72
6B	Benzo(a)pyrene	ND	2.8	ND	ND	ND	100	81	ND	125	72
7B	Benzo(b)fluoranthene	ND	5.3	ND	ND	ND	100	76	ND	125	63
8B	Benzo(ghi)perylene	ND	4.6	ND	ND	ND	0	-	ND	0	-
9B	Benzo(k)fluoranthene	ND	2.8	ND	ND	ND	100	89	ND	125	87
10B	bis(2-Chloroethoxy)methane	ND	5.9	ND	ND	ND	100	110	ND	125	96
11B	bis(2-Chloroethyl) ether	ND	6.3	ND	ND	ND	100	67	ND	125	79
12B	bis(2-Chloroisopropyl)ether	ND	6.3	ND	ND	ND	100	55	ND	125	91
13B	bis(2-Ethylhexyl)phthalate	ND	11	25.1	ND	ND	100	80	ND	125	78
14B	4-Bromophenyl phenyl ether	ND	2.1	ND	ND	ND	100	66	ND	125	70
15B	Butyl benzyl phthalate	ND	11	ND	ND	ND	100	66	ND	125	70
16B	2-Chloronaphthalene	ND	2.1	ND	ND	ND	100	90	ND	125	67
17B	4-Chlorophenyl phenyl ether	ND	4.7	ND	ND	ND	100	44	ND	125	71
18B	Chrysene	ND	2.8	ND	ND	ND	100	79	ND	125	75
19B	Dibenzo(a,h)anthracene	ND	11	ND	ND	ND	0	-	ND	0	-
20B	1,2-Dichlorobenzene	ND	2.1	ND	ND	ND	100	49	ND	125	74
21B	1,3-Dichlorobenzene	ND	2.1	ND	ND	ND	100	43	ND	125	63
22B	1,4-Dichlorobenzene	ND	4.9	ND	ND	ND	100	45	ND	125	45
23B	3,3'-Dichlorobenzidine	ND	18	ND	ND	ND	100	79	ND	125	42
24B	Diethyl phthalate	ND	11	ND	ND	ND	100	17	ND	125	29
25B	Dimethyl phthalate	ND	11	ND	ND	ND	100	3	ND	125	6
26B	Di-n-butyl phthalate	ND	11	ND	ND	ND	100	97	ND	125	61
27B	2,4-Dinitrotoluene	ND	6.3	ND	ND	ND	100	43	ND	125	84
28B	2,6-Dinitrotoluene	ND	2.1	ND	ND	ND	100	40	ND	125	78
29B	Di-n-octyl phthalate	ND	11	23.0	ND	ND	100	80	ND	125	76
30B	1,2-Diphenylhydrazine	ND	11	ND	ND	ND	100	40	ND	125	69
31B	Fluoranthene	ND	2.4	ND	ND	ND	100	183	ND	125	62
32B	Fluorene	ND	2.1	ND	ND	ND	100	50	ND	125	71

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5519 GERAGHTY & MILLER

GMMONQUPPT WHW-1

880531 1320 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
33B	Hexachlorobenzene	ND	2.1	ND	ND	ND	100	137	ND	125	76
34B	Hexachlorobutadiene	ND	1.0	ND	ND	ND	100	46	ND	125	54
35B	Hexachlorocyclopentadiene	ND	11	ND	ND	ND	0	-	ND	0	-
36B	Hexachloroethane	ND	1.8	ND	ND	ND	100	51	ND	125	51
37B	Indeno(1,2,3-c,d)pyrene	ND	5.2	ND	ND	ND	0	-	ND	0	-
38B	Isophorone	ND	2.4	ND	ND	ND	100	88	ND	125	70
39B	Naphthalene	ND	1.8	ND	ND	ND	100	65	ND	125	68
40B	Nitrobenzene	ND	2.1	ND	ND	ND	100	78	ND	125	71
41B	N-Nitrosodimethylamine	ND	11	ND	ND	ND	0	-	ND	0	-
42B	N-Nitrosodi-n-propylamine	ND	11	ND	ND	ND	100	97	ND	125	68
43B	N-Nitrosodiphenylamine	ND	2.1	ND	ND	ND	100	35	ND	125	62
44B	Phenanthrene	ND	6.0	ND	ND	ND	100	76	ND	125	68
45B	Pyrene	ND	2.1	ND	ND	ND	100	201	ND	125	59
46B	1,2,4-Trichlorobenzene	ND	2.1	ND	ND	ND	100	87	ND	125	79

All zero and variable recoveries have been manually verified.

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Pesticide/PCB Compounds - GC/MS Analysis Data (QR04)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5519 GERAGHTY & MILLER

GMMONQUPPT WHW-1

880531 1320 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1P	Aldrin	ND	2.1	ND	ND	ND	100	63	ND	125	64
2P	Alpha-BHC	ND	11	ND	ND	ND	100	36	ND	125	48
3P	Beta-BHC	ND	4.7	ND	ND	ND	100	93	ND	125	57
4P	Gamma-BHC	ND	11	ND	ND	ND	100	34	ND	125	46
5P	Delta-BHC	ND	3.4	ND	ND	ND	100	15	ND	125	22
6P	Chlordane	ND	11	ND	ND	ND	200	20	ND	250	84
7P	4,4'-DDT	ND	3.1	ND	ND	ND	100	57	ND	125	66
8P	4,4'-DDE	ND	6.2	ND	ND	ND	100	41	ND	125	83
9P	4,4'-DDD	ND	5.2	ND	ND	ND	100	61	ND	125	70
10P	Dieldrin	ND	2.8	ND	ND	ND	100	28	ND	125	84
11P	Endosulfan I	ND	11	ND	ND	ND	100	3	ND	125	25
12P	Endosulfan II	ND	11	ND	ND	ND	100	16	ND	125	20
13P	Endosulfan sulfate	ND	6.2	ND	ND	ND	100	46	ND	125	63
14P	Endrin	ND	11	ND	ND	ND	100	33	ND	125	86
15P	Endrin aldehyde	ND	11	ND	ND	ND	100	36	ND	125	8
16P	Heptachlor	ND	2.1	ND	ND	ND	100	55	ND	125	66
17P	Heptachlor epoxide	ND	2.4	ND	ND	ND	100	17	ND	125	97
18P	PCB-1242	ND	40	ND	ND	ND	0	-	ND	0	-
19P	PCB-1254	ND	40	ND	ND	ND	0	-	ND	0	-
20P	PCB-1221	ND	40	ND	ND	ND	0	-	ND	0	-
21P	PCB-1232	ND	40	ND	ND	ND	0	-	ND	0	-
22P	PCB-1248	ND	40	ND	ND	ND	0	-	ND	0	-
23P	PCB-1260	ND	40	ND	ND	ND	100	97	ND	125	81
24P	PCB-1016	ND	40	ND	ND	ND	0	-	ND	0	-
25P	Toxaphene	ND	11	ND	ND	ND	0	-	ND	0	-

All zero and variable recoveries have been manually verified.



ETC

JUN 21, 1988
M99

TABLE 1: QUANTITATIVE RESULTS

Metals - Analysis Data (QR52)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5519 GERAGHTY & MILLER

GMMONQUPPT WHW-1

880531 1320 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

Compound	Results									
	Sample Concen. ug/l	MDL ug/l								
Antimony	BMDL	77								
Arsenic	ND	10								
Beryllium	BMDL	.54								
Cadmium	ND	4.6								
Chromium	ND	26								
Copper	BMDL	13								
Lead	ND	51								
Mercury	ND	.20								
Nickel	BMDL	18								
Selenium	ND	5.0								
Silver	ND	18								
Thallium	ND	10								
Zinc	68	20								

JUL 2, 1988

[illegible]

Conventional Analysis Data (QR10)

Chain of Custody Data Required for ETC Data Management Summary Reports							
ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours	
BE5519	GERAGHTY & MILLER	GMMONQUPPT WHW-1		880531	1320	1	

[illegible]

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA
Volatile Compounds - GC/MS Analysis Data (QR01)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5524 GERAGHTY & MILLER GMMONQUPPT WHW-2 880531 1100 1
ETC Sample No. Company Facility Sample Point Date Time Elapsed Hours

NPDES Number	Compound <small>Acrolein and Acrylonitrile values are screen only.</small>	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l A	Second ug/l A	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1V	Acrolein	ND	100	721	837	ND	800	93	ND	800	90
2V	Acrylonitrile	ND	100	65.3	87.0	ND	80.0	85	ND	80.0	82
3V	Benzene	ND	4.4	45.9	51.8	ND	50.0	98	ND	50.0	92
4V	bis(Chloromethyl)ether	ND	10	ND	ND	ND	0	-	ND	0	-
5V	Bromoform	ND	4.7	44.7	50.3	ND	50.0	96	ND	50.0	89
6V	Carbon tetrachloride	ND	2.8	43.8	51.4	ND	50.0	99	ND	50.0	88
7V	Chlorobenzene	ND	6.0	45.4	52.6	ND	50.0	99	ND	50.0	91
8V	Chlorodibromomethane	ND	3.1	46.0	50.6	ND	50.0	95	ND	50.0	92
9V	Chloroethane	ND	10	43.9	45.4	ND	50.0	111	ND	50.0	88
10V	2-Chloroethylvinyl ether	ND	10	49.9	57.7	ND	50.0	106	ND	50.0	100
11V	Chloroform	ND	1.6	44.4	52.4	ND	50.0	93	ND	50.0	89
12V	Dichlorobromomethane	ND	2.2	46.5	49.0	ND	50.0	101	ND	50.0	93
13V	Dichlorodifluoromethane	ND	10	61.3	66.3	ND	50.0	178.	ND	50.0	123
14V	1,1-Dichloroethane	ND	4.7	44.6	52.4	ND	50.0	91	ND	50.0	89
15V	1,2-Dichloroethane	ND	2.8	43.4	51.0	ND	50.0	93	ND	50.0	87
16V	1,1-Dichloroethylene	ND	2.8	44.4	53.1	ND	50.0	92	ND	50.0	89
17V	1,2-Dichloropropane	ND	6.0	47.1	49.8	ND	50.0	96	ND	50.0	94
18V	cis-1,3-Dichloropropylene	ND	5.0	44.6	50.5	ND	50.0	83	ND	50.0	89
19V	Ethylbenzene	ND	7.2	47.9	51.9	ND	50.0	98	ND	50.0	96
20V	Methyl bromide	ND	10	16.1	21.4	ND	50.0	125	ND	50.0	32
21V	Methyl chloride	ND	10	44.8	47.8	ND	50.0	130	ND	50.0	90
22V	Methylene chloride	ND	2.8	43.3	49.8	5.66	50.0	82	ND	50.0	87
23V	1,1,2,2-Tetrachloroethane	ND	6.9	45.6	4.60	ND	50.0	90	ND	50.0	91
24V	Tetrachloroethylene	ND	4.1	46.2	52.6	ND	50.0	95	ND	50.0	92
25V	Toluene	ND	6.0	47.5	53.1	ND	50.0	97	ND	50.0	95
26V	1,2-Trans-dichloroethylene	848	1.6	44.0	53.6	ND	50.0	64.	ND	50.0	88
27V	1,1,1-Trichloroethane	ND	3.8	43.3	52.9	ND	50.0	103	ND	50.0	87
28V	1,1,2-Trichloroethane	ND	5.0	43.4	49.5	ND	50.0	99	ND	50.0	87
29V	Trichloroethylene	10800	1.9	46.7	83.2	ND	50.0	104	ND	50.0	93
30V	Trichlorofluoromethane	BMDL	10	57.4	64.6	ND	50.0	107	9.08	50.0	97
31V	Vinyl chloride	ND	10	47.1	52.2	ND	50.0	155.	ND	50.0	94
18V	trans-1,3-Dichloropropylene	ND	10	45.6	49.6	ND	50.0	99	ND	50.0	91

ETC

JUL 10, 1988
QA9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Acid Compounds - GC/MS Analysis Data (QR02)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5524 GERAGHTY & MILLER

GMMONQUPPT WHW-2

880531 1100 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1A	2-Chlorophenol	ND	3.5	ND	ND	ND	100	62	ND	125	22
2A	2,4-Dichlorophenol	ND	2.8	ND	ND	ND	100	49	ND	125	87
3A	2,4-Dimethylphenol	ND	2.8	ND	ND	ND	100	53	ND	125	60
4A	4,6-Dinitro-o-cresol	ND	25	ND	ND	ND	100	22	ND	125	76
5A	2,4-Dinitrophenol	ND	44	ND	ND	ND	100	1	ND	125	30
6A	2-Nitrophenol	ND	3.8	ND	ND	ND	100	83	ND	125	85
7A	4-Nitrophenol	ND	2.5	ND	ND	ND	100	11	ND	125	53
8A	p-Chloro-m-cresol	ND	3.2	ND	ND	ND	100	36	ND	125	103
9A	Pentachlorophenol	ND	3.8	ND	ND	ND	100	5	ND	125	49
10A	Phenol	ND	1.6	ND	ND	ND	100	27	985	125	1
11A	2,4,6-Trichlorophenol	ND	2.8	ND	ND	ND	100	70	ND	125	76

All zero and variable recoveries have been manually verified.

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5524 GERAGHTY & MILLER

GMMONQUPPT WHW-2

880531 1100 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1B	Acenaphthene	ND	2.0	ND	ND	ND	100	74	ND	125	69
2B	Acenaphthylene	ND	3.7	ND	ND	ND	100	70	ND	125	68
3B	Anthracene	ND	2.0	ND	ND	ND	100	81	ND	125	70
4B	Benzidine	ND	46	ND	ND	ND	100	98	ND	125	0
5B	Benzo(a)anthracene	ND	8.2	ND	ND	ND	100	78	ND	125	72
6B	Benzo(a)pyrene	ND	2.6	ND	ND	ND	100	81	ND	125	72
7B	Benzo(b)fluoranthene	ND	5.1	ND	ND	ND	100	76	ND	125	63
8B	Benzo(ghi)perylene	ND	4.3	ND	ND	ND	0	-	ND	0	-
9B	Benzo(k)fluoranthene	ND	2.6	ND	ND	ND	100	89	ND	125	87
10B	bis(2-Chloroethoxy)methane	ND	5.6	ND	ND	ND	100	110	ND	125	96
11B	bis(2-Chloroethyl) ether	ND	6.0	ND	ND	ND	100	67	ND	125	79
12B	bis(2-Chloroisopropyl)ether	ND	6.0	ND	ND	ND	100	55	ND	125	91
13B	bis(2-Ethylhexyl)phthalate	BMDL	11	25.1	ND	ND	100	80	ND	125	78
14B	4-Bromophenyl phenyl ether	ND	2.0	ND	ND	ND	100	66	ND	125	70
15B	Butyl benzyl phthalate	ND	11	ND	ND	ND	100	66	ND	125	70
16B	2-Chloronaphthalene	ND	2.0	ND	ND	ND	100	90	ND	125	67
17B	4-Chlorophenyl phenyl ether	ND	4.4	ND	ND	ND	100	44	ND	125	71
18B	Chrysene	ND	2.6	ND	ND	ND	100	79	ND	125	75
19B	Dibenzo(a,h)anthracene	ND	11	ND	ND	ND	0	-	ND	0	-
20B	1,2-Dichlorobenzene	ND	2.0	ND	ND	ND	100	49	ND	125	74
21B	1,3-Dichlorobenzene	ND	2.0	ND	ND	ND	100	43	ND	125	63
22B	1,4-Dichlorobenzene	ND	4.6	ND	ND	ND	100	45	ND	125	45
23B	3,3'-Dichlorobenzidine	ND	17	ND	ND	ND	100	79	ND	125	42
24B	Diethyl phthalate	ND	11	ND	ND	ND	100	17	ND	125	29
25B	Dimethyl phthalate	ND	11	ND	ND	ND	100	3	ND	125	6
26B	Di-n-butyl phthalate	ND	11	ND	ND	ND	100	97	ND	125	61
27B	2,4-Dinitrotoluene	ND	6.0	ND	ND	ND	100	43	ND	125	84
28B	2,6-Dinitrotoluene	ND	2.0	ND	ND	ND	100	40	ND	125	78
29B	Di-n-octyl phthalate	ND	11	23.0	ND	BMDL	100	80	ND	125	76
30B	1,2-Diphenylhydrazine	ND	11	ND	ND	ND	100	40	ND	125	69
31B	Fluoranthene	ND	2.3	ND	ND	ND	100	183	ND	125	62
32B	Fluorene	ND	2.0	ND	ND	ND	100	50	ND	125	71

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Base/Neutral Compounds - GC/MS Analysis Data (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5524 GERAGHTY & MILLER

GMMONQUPPT WHW-2

880531 1100 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
33B	Hexachlorobenzene	ND	2.0	ND	ND	ND	100	137	ND	125	76
34B	Hexachlorobutadiene	ND	.95	ND	ND	ND	100	46	ND	125	54
35B	Hexachlorocyclopentadiene	ND	11	ND	ND	ND	0	-	ND	0	-
36B	Hexachloroethane	ND	1.7	ND	ND	ND	100	51	ND	125	51
37B	Indeno(1,2,3-c,d)pyrene	ND	4.9	ND	ND	ND	0	-	ND	0	-
38B	Isophorone	ND	2.3	ND	ND	ND	100	88	ND	125	70
39B	Naphthalene	ND	1.7	ND	ND	ND	100	65	ND	125	68
40B	Nitrobenzene	ND	2.0	ND	ND	ND	100	78	ND	125	71
41B	N-Nitrosodimethylamine	ND	11	ND	ND	ND	0	-	ND	0	-
42B	N-Nitrosodi-n-propylamine	ND	11	ND	ND	ND	100	97	ND	125	68
43B	N-Nitrosodiphenylamine	ND	2.0	ND	ND	ND	100	35	ND	125	62
44B	Phenanthrene	ND	5.7	ND	ND	ND	100	76	ND	125	63
45B	Pyrene	ND	2.0	ND	ND	ND	100	201	ND	125	59
46B	1,2,4-Trichlorobenzene	ND	2.0	ND	ND	ND	100	87	ND	125	79

All zero and variable recoveries have been manually verified.

ETC

JUN 26, 1988
QB9054

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Pesticide/PCB Compounds - GC/MS Analysis Data (QR04)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5524 GERAGHTY & MILLER

GMMONQUPPT WHW-2

880531 1100 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1P Aldrin		ND	2.0	ND	ND	ND	100	63	ND	125	64
2P Alpha-BHC		ND	11	ND	ND	ND	100	36	ND	125	48
3P Beta-BHC		ND	4.4	ND	ND	ND	100	93	ND	125	57
4P Gamma-BHC		ND	11	ND	ND	ND	100	34	ND	125	46
5P Delta-BHC		ND	3.3	ND	ND	ND	100	15	ND	125	22
6P Chlordane		ND	11	ND	ND	ND	200	20	ND	250	84
7P 4,4'-DDT		ND	2.9	ND	ND	ND	100	57	ND	125	66
8P 4,4'-DDE		ND	5.9	ND	ND	ND	100	41	ND	125	83
9P 4,4'-DDD		ND	4.9	ND	ND	ND	100	61	ND	125	70
10P Dieldrin		ND	2.6	ND	ND	ND	100	28	ND	125	84
11P Endosulfan I		ND	11	ND	ND	ND	100	3	ND	125	25
12P Endosulfan II		ND	11	ND	ND	ND	100	16	ND	125	20
13P Endosulfan sulfate		ND	5.9	ND	ND	ND	100	46	ND	125	63
14P Endrin		ND	11	ND	ND	ND	100	33	ND	125	86
15P Endrin aldehyde		ND	11	ND	ND	ND	100	36	ND	125	8
16P Heptachlor		ND	2.0	ND	ND	ND	100	55	ND	125	66
17P Heptachlor epoxide		ND	2.3	ND	ND	ND	100	17	ND	125	97
18P PCB-1242		ND	38	ND	ND	ND	0	-	ND	0	-
19P PCB-1254		ND	38	ND	ND	ND	0	-	ND	0	-
20P PCB-1221		ND	38	ND	ND	ND	0	-	ND	0	-
21P PCB-1232		ND	38	ND	ND	ND	0	-	ND	0	-
22P PCB-1248		ND	38	ND	ND	ND	0	-	ND	0	-
23P PCB-1260		ND	38	ND	ND	ND	100	97	ND	125	81
24P PCB-1016		ND	38	ND	ND	ND	0	-	ND	0	-
25P Toxaphene		ND	11	ND	ND	ND	0	-	ND	0	-

All zero and variable recoveries have been manually verified.



ETC

JUN 21, 1988
M99

TABLE 1: QUANTITATIVE RESULTS

Metals - Analysis Data (QR52)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5524 GERAGHTY & MILLER

GMMONQUPPT WHW-2

880531 1100 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

Compound	Results								
	Sample Concen. ug/l	MDL ug/l							
Antimony	ND	77							
Arsenic	ND	10							
Beryllium	BMDL	.54							
Cadmium	ND	4.6							
Chromium	ND	26							
Copper	BMDL	13							
Lead	ND	51							
Mercury	ND	.20							
Nickel	27	18							
Selenium	5.9	5.0							
Silver	ND	18							
Thallium	ND	10							
Zinc	43	20							



ETC

JUL 2, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Conventional Analysis Data (QR10)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5524 GERAGHTY & MILLER

GMMONQUPPT WW-2

880531 1100 1

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Results									
	Sample Concen, mg/l	MDL mg/l								
Phenolics, Total	< .050	.050								
Cyanide, Total	.061	.025								

ETC

ENVIRONMENTAL
TESTING and CERTIFICATION

JUL 10 1988

ETC

JUN 28, 1988
QV9147

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA
Volatile Compounds - GC/MS Analysis Data (QR01)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5526 GERAGHTY & MILLER

GMMONQUPPT FIELDBLANK 880531

0

ETC Sample No.

Company

Facility

Sample Point Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1V Acrolein	ND	100	184	233	ND	800	39	ND	800	23	
2V Acrylonitrile	ND	100	63.9	83.1	ND	80.0	88	ND	80.0	80	
3V Benzene	ND	4.4	52.4	51.5	ND	50.0	97	ND	50.0	105	
4V bis(Chloromethyl)ether	ND	10	ND	ND	ND	0	-	ND	0	-	
5V Bromoform	ND	4.7	40.8	52.4	ND	50.0	107	ND	50.0	82	
6V Carbon tetrachloride	ND	2.8	46.2	46.7	ND	50.0	132	ND	50.0	92	
7V Chlorobenzene	BMDL	6.0	49.4	50.0	ND	50.0	116	ND	50.0	99	
8V Chlorodibromomethane	ND	3.1	46.8	50.2	ND	50.0	118	ND	50.0	94	
9V Chloroethane	ND	10	31.5	28.3	ND	50.0	194	ND	50.0	63	
10V 2-Chloroethylvinyl ether	ND	10	26.5	50.8	ND	50.0	113	ND	50.0	53	
11V Chloroform	ND	1.6	38.5	46.6	ND	50.0	100	ND	50.0	77	
12V Dichlorobromomethane	ND	2.2	48.0	48.1	ND	50.0	125	ND	50.0	96	
13V Dichlorodifluoromethane	ND	10	22.9	27.0	ND	50.0	111	ND	50.0	46	
14V 1,1-Dichloroethane	ND	4.7	43.0	48.2	ND	50.0	106	ND	50.0	86	
15V 1,2-Dichloroethane	ND	2.8	35.9	46.3	ND	50.0	102	ND	50.0	72	
16V 1,1-Dichloroethylene	ND	2.8	38.0	46.5	ND	50.0	104	ND	50.0	76	
17V 1,2-Dichloropropane	ND	6.0	50.5	19.9	ND	50.0	101	ND	50.0	101	
18V cis-1,3-Dichloropropylene	ND	5.0	48.7	52.9	ND	50.0	116	ND	50.0	97	
19V Ethylbenzene	ND	7.2	42.6	48.8	ND	50.0	108	ND	50.0	85	
20V Methyl bromide	ND	10	24.8	30.6	ND	50.0	233	ND	50.0	50	
21V Methyl chloride	ND	10	35.0	44.0	ND	50.0	201	ND	50.0	70	
22V Methylene chloride	ND	11.6	23.9	62.9	ND	50.0	311	5.46	50.0	37	
23V 1,1,2,2-Tetrachloroethane	ND	2.8	42.7	48.7	ND	50.0	88	ND	50.0	85	
24V Tetrachloroethylene	ND	6.9	40.9	49.1	ND	50.0	87	ND	50.0	82	
25V Toluene	BMDL	4.1	53.7	50.9	ND	50.0	116	ND	50.0	107	
26V 1,2-Trans-dichloroethylene	ND	1.6	42.9	49.6	ND	50.0	104	ND	50.0	86	
27V 1,1,1-Trichloroethane	ND	3.8	47.7	46.4	ND	50.0	134	ND	50.0	95	
28V 1,1,2-Trichloroethane	ND	5.0	47.8	50.6	ND	50.0	100	ND	50.0	96	
29V Trichloroethylene	ND	1.9	45.7	48.5	ND	50.0	113	ND	50.0	91	
30V Trichlorofluoromethane	BMDL	10	34.5	40.1	ND	50.0	145	ND	50.0	69	
31V Vinyl chloride	ND	10	25.2	30.1	ND	50.0	92	ND	50.0	50	
18V trans-1,3-Dichloropropylene	ND	10	46.9	49.2	ND	50.0	124	ND	50.0	94	

Acrolein and Acrylonitrile values are screen only.
All zero and variable recoveries have been manually verified.

Acrolein and Acrylonitrile values are screen only.

All save and variable recoveries have been manually verified.

ETC

JUN 23, 1988

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Volatile Compounds - GC/MS Analysis Data (QR01)

Chain of Custody Data Required for ETC Data Management Summary Reports

BE5525 GERAGHTY & MILLER

GMMONQUPPT XTB

880531

0

ETC Sample No.

Company

Facility

Sample Point

Date

Time

Elapsed
Hours

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
1V Acrolein		ND	100	723	677	ND	800	70	ND	800	90
2V Acrylonitrile		ND	100	77.9	108	ND	80.0	113	ND	80.0	97
3V Benzene		ND	4.4	39.8	55.5	ND	50.0	106	ND	50.0	80
4V bis(Chloromethyl)ether		ND	10	ND	ND	ND	0	-	ND	0	-
5V Bromoform		ND	4.7	42.7	57.9	ND	50.0	100	ND	50.0	85
6V Carbon tetrachloride		ND	2.8	41.2	56.4	ND	50.0	101	ND	50.0	82
7V Chlorobenzene		ND	6.0	40.4	54.2	ND	50.0	101	ND	50.0	81
8V Chlorodibromomethane		ND	3.1	42.0	56.4	ND	50.0	100	ND	50.0	84
9V Chloroethane		ND	10	66.5	71.3	ND	50.0	120	ND	50.0	133
10V 2-Chloroethylvinyl ether		ND	10	49.2	65.3	ND	50.0	104	ND	50.0	98
11V Chloroform		ND	1.6	41.4	62.4	ND	50.0	109	ND	50.0	83
12V Dichlorobromomethane		ND	2.2	39.9	53.4	ND	50.0	95	ND	50.0	80
13V Dichlorodifluoromethane		ND	10	96.4	107	ND	50.0	0	ND	50.0	193
14V 1,1-Dichloroethane		ND	4.7	44.5	60.8	ND	50.0	109	ND	50.0	89
15V 1,2-Dichloroethane		ND	2.8	44.8	64.4	ND	50.0	112	ND	50.0	90
16V 1,1-Dichloroethylene		ND	2.8	45.0	65.0	ND	50.0	113	ND	50.0	90
17V 1,2-Dichloropropane		ND	6.0	38.8	54.5	ND	50.0	108	ND	50.0	78
18V cis-1,3-Dichloropropylene		ND	5.0	39.9	55.7	ND	50.0	103	ND	50.0	80
19V Ethylbenzene		ND	7.2	41.2	54.0	ND	50.0	103	ND	50.0	82
20V Methyl bromide		ND	10	83.3	75.5	ND	50.0	117	ND	50.0	167
21V Methyl chloride		ND	10	54.2	58.7	ND	50.0	99	ND	50.0	108
22V Methylene chloride		ND	2.8	56.7	72.4	ND	50.0	125	2.77	50.0	108
23V 1,1,2,2-Tetrachloroethane		ND	6.9	41.9	60.0	ND	50.0	105	ND	50.0	84
24V Tetrachloroethylene		ND	4.1	40.8	56.3	ND	50.0	106	ND	50.0	82
25V Toluene		ND	6.0	39.5	54.3	ND	50.0	102	ND	50.0	79
26V 1,2-Trans-dichloroethylene		ND	1.6	40.4	61.0	ND	50.0	109	ND	50.0	81
27V 1,1,1-Trichloroethane		ND	3.8	48.2	64.0	ND	50.0	114	ND	50.0	96
28V 1,1,2-Trichloroethane		ND	5.0	40.0	56.0	ND	50.0	101	ND	50.0	80
29V Trichloroethylene		ND	1.9	40.3	54.7	ND	50.0	103	ND	50.0	81
30V Trichlorofluoromethane		ND	10	50.0	60.5	ND	50.0	113	ND	50.0	100
31V Vinyl chloride		ND	10	59.3	72.2	ND	50.0	235	ND	50.0	119
18V trans-1,3-Dichloropropylene		ND	10	39.9	54.0	ND	50.0	97	ND	50.0	80

Acrolein and Acrylonitrile values are screen only.

All zero and variable recoveries have been manually verified.

Dichlorodifluoromethane: See Comments sheet.

WATER SAMPLING LOG

Project/No. NO308QJ04 Page 1 of 1

Site Location _____

Site/Well No. 4W-1 Coded/
Replicate No. BE 5519 Date 5-31-88

Weather 90°/SUNNY Time Sampling
Began 13:22 Time Sampling
Completed 14:53

EVACUATION DATA

Description of Measuring Point (MP) Top of PVC Casing

Height of MP Above/Below Land Surface _____ MP Elevation —

Total Sounded Depth of Well Below MP 47.00 Water-Level Elevation —

Held 39.00 Depth to Water Below MP 38.03 Diameter of Casing 2"

Wet .97 Water Column in Well 8.97 Gallons Pumped/Bailed
Prior to Sampling 4.3

38.03 Gallons per Foot 0.16

Gallons in Well 1.4 Sampling Pump Intake Setting
(feet below land surface) —

Evacuation Method TEFLON Bailor

SAMPLING DATA/FIELD PARAMETERS

Color Gray Odor None Appearance Turbid Temperature 17 °F/°C Ⓢ

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, 1680 umhos/cm pH 6.45

Sampling Method and Material TEFLON Bailor & Nylon Cord

Constituents Sampled

Container Description
From Lab ☒ or G&M _____

Preservative

Priority Pollutants

See Chain of Custody

Remarks _____

Sampling Personnel B. Blum

WELL CASING VOLUMES

GAL./FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

WATER SAMPLING LOG

Project/No. MONSANTO QUEENY NO 308 Q404 Page 1 of 1

Site Location ST LOUIS, MO

Site/Well No. HW-2 Coded/ BE 5524 Date 5-31-88

Weather 90° / SUNNY Time Sampling Began 11:03 Time Sampling Completed 12:00

EVACUATION DATA

Description of Measuring Point (MP) Top of PVC Casing

Height of MP Above/Below Land Surface _____ MP Elevation -

Total Sounded Depth of Well Below MP 31.00 Water-Level Elevation -

Held 30.00 Depth to Water Below MP 28.90 Diameter of Casing 2"

Wet 1.10 Water Column in Well 2.10 Gallons Pumped/Bailed Prior to Sampling 1.0

28.90 Gallons per Foot 0.16

Gallons in Well 0.34 Sampling Pump Intake Setting (feet below land surface) -

Evacuation Method TEFLON Bailer

SAMPLING DATA/FIELD PARAMETERS

Color RUSTY ORANGE Odor None Appearance Turbid Temperature 18° °F/°C (C)

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm 1650 pH 6.85

Sampling Method and Material TEFLON Bailer & Nylon Cord

Constituents Sampled	Container Description From Lab <input checked="" type="checkbox"/> or G&M _____	Preservative
<u>PRIORITY POLLUTANT</u>	<u>SEE CHAIN OF CUSTODY</u>	
_____	_____	_____
_____	_____	_____

Remarks _____

Sampling Personnel B. Blum

WELL CASING VOLUMES

GAL./FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

WATER SAMPLING LOG

Project/No. MONSANTO / QUEEN Page 1 of 1
 Site Location St Louis, MO
 Site/Well No. VW-1 Coded/Replicate No. 3E5523 Date 5-31-88
 Weather 90's / SUNNY Time Sampling Began 17:30 Time Sampling Completed _____

EVACUATION DATA

Description of Measuring Point (MP) TOC
 Height of MP Above/Below Land Surface — MP Elevation —
 Total Sounded Depth of Well Below MP 17.00 Water-Level Elevation —
 Held 11.00 Depth to Water Below MP 8.80 Diameter of Casing 2"
 Wet 2.20 Water Column in Well 8.20 Gallons Pumped/Bailed Prior to Sampling 4.0
8.80 Gallons per Foot 0.16
 Gallons in Well 1.3 Sampling Pump Intake Setting (feet below land surface) _____
 Evacuation Method TEFLON Bailer

SAMPLING DATA/FIELD PARAMETERS

Color Black Odor STRONG Hydrocarbon Appearance Obvious Sheen Temperature 17 °F 60C
 Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm 2750 pH 9.30

Sampling Method and Material TEFLON Bailer & Nylon Cord

Constituents Sampled	Container Description	Preservative
<u>Priority Pollutants</u>	From Lab <input checked="" type="checkbox"/> or G&M _____ <u>see Chain of Custody</u>	

Remarks Same as Shuttle Trip Blank Vol # BE5525

Sampling Personnel BAB, TNL

WELL CASING VOLUMES

GAL./FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50
			4" = 0.65
			6" = 1.46

WATER SAMPLING LOG

Project/No. Monsanto County Page 1 of 1
 Site Location St Louis, MO
 Site/Well No. VW-2 Coded/Replicate No. BE5520
BE5521 Date 5-31-88
 Weather 90's / SUNNY Time Sampling Began 16:31 Time Sampling Completed _____

EVACUATION DATA

Description of Measuring Point (MP) T.O.C
 Height of MP Above/Below Land Surface _____ MP Elevation 5
 Total Sounded Depth of Well Below MP 17.00 Water-Level Elevation _____
 Held 11.00 Depth to Water Below MP 9.41 Diameter of Casing 2"
 Wet 1.59 Water Column in Well 7.59 Gallons Pumped/Bailed Prior to Sampling 3.7
9.41 Gallons per Foot .16
 Gallons in Well 1.2 Sampling Pump Intake Setting (feet below land surface) ✓
 Evacuation Method Teflon bailer

SAMPLING DATA/FIELD PARAMETERS

Color Gray-Black Odor Sweet aromatic Appearance Turbid with sheen Temperature 15 °F (C)
 Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance 2390 umhos/cm pH 7.12

Sampling Method and Material Teflon Bailer & Nylon Cord

Constituents Sampled	Container/Description From Lab <u>✓</u> or G&M _____	Preservative
<u>Priority Pollutants</u>	<u>See chain of custody</u>	

Remarks Replicate sample taken. VW-10

Sampling Personnel BAB, TNL

WELL CASING VOLUMES

GAL./FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46